

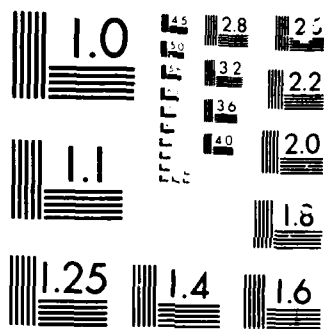
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POL PIER REPAIRS
LAJES FIELD, AZORES

CONSTRUCTION INSPECTION VISIT NO. 3
SEPTEMBER 25 TO OCTOBER 3, 1980

CONTRACT NO. N-62477-79-C-0021
MODIFICATION P-00001

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THE DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
CHESAPEAKE DIVISION
WASHINGTON, D. C.

BY

OLKO ENGINEERING
CONSULTANTS • DESIGNERS

500 FIFTH AVENUE • NEW YORK, NEW YORK 10036 • (212) BR 9-2822

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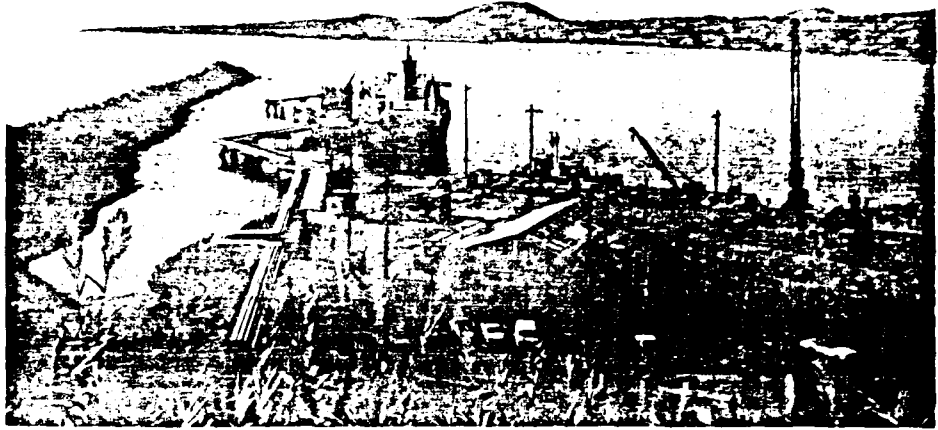
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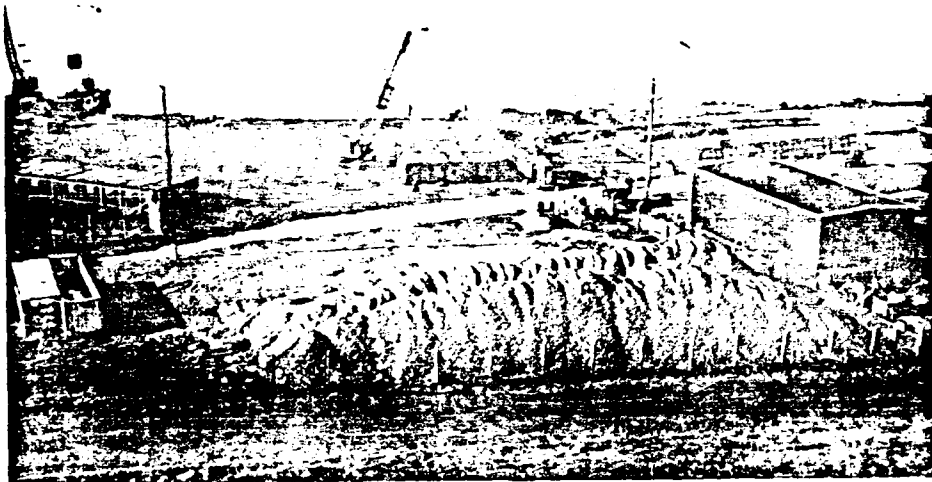




POL PIER - OVERALL VIEW
First Ship to Be Berthed - "World Promise" - After
the 100-Day Shutdown Period. Unloaded 41,000 BBL
of Diesel Oil

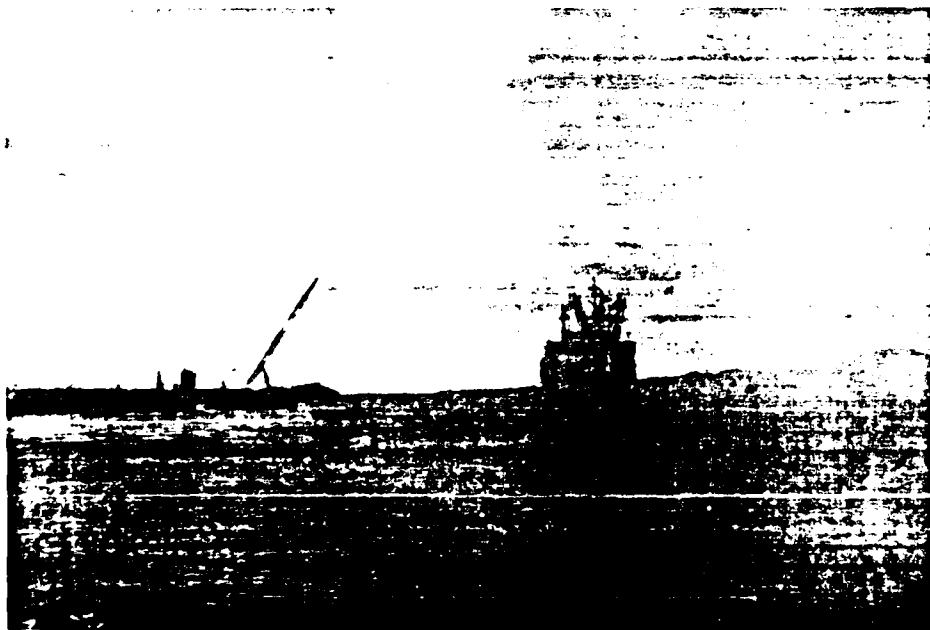


LOADING PLATFORM
"World Promise" At Berth, Bearing
Against the New Steel Sheet Pile
Fendering and "Sea Cushion" Foam
Filled Floating Marine Fenders



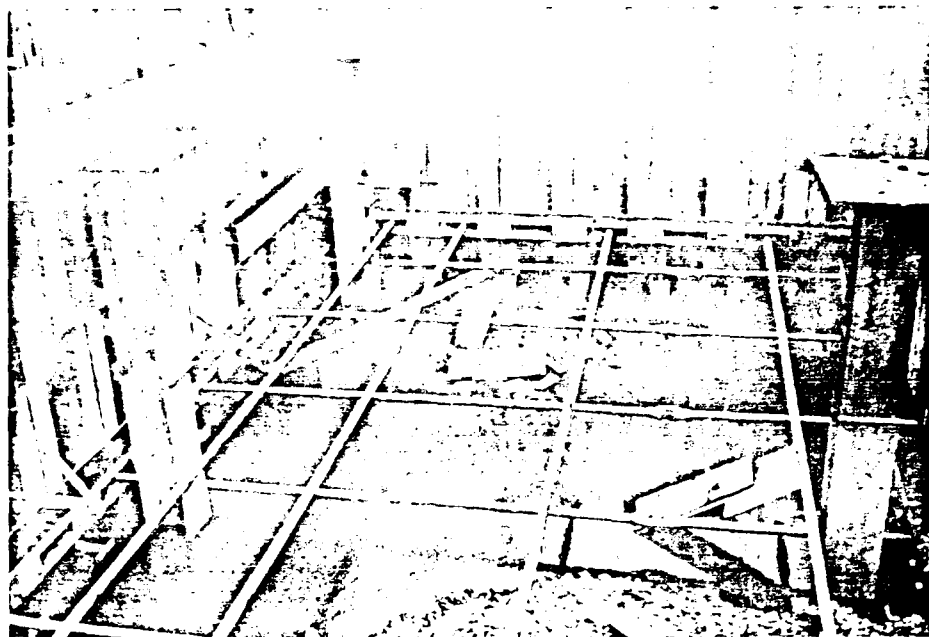
SHORESIDE - OVERALL VIEW

Crushed Stone Stockpiled to Be Used to Fill Both the New North and South Dolphins. Adjacent DANAC Workshop to Be Dismantled Upon Completion of Construction.



MIDSTREAM MOORING

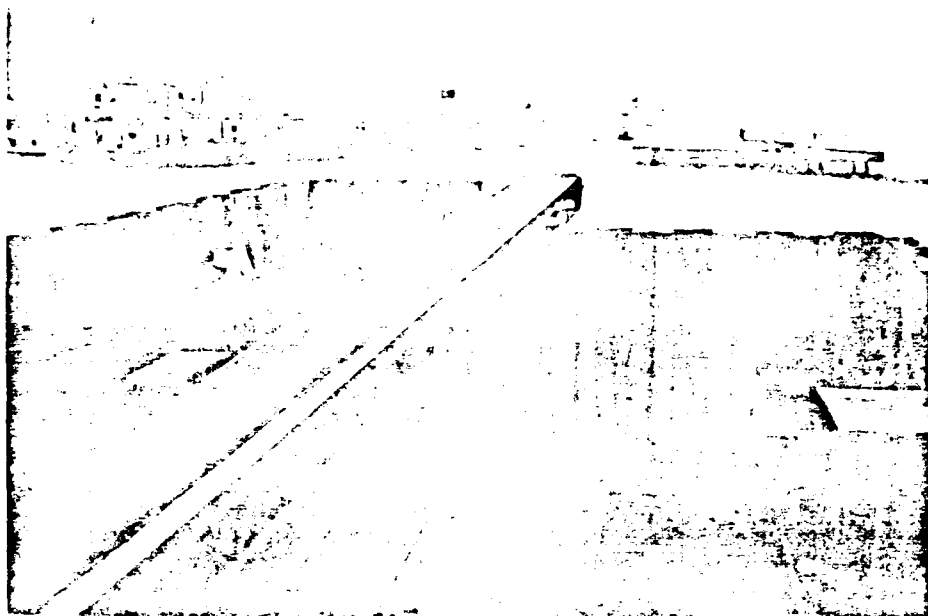
The "Gulf Trader" of the Lykes Lines, Moored in Mid Stream to Bow and Stern Harbor Buoys, to Avoid Disrupting Construction Work at the POL Pier. The Ship Was Loaded with General Cargo by LCM's.



NEW NORTH DOLPHIN
Looking North at the Internal Water and Tie Rod System. The Cell is Partially Filled with Crushed Stone

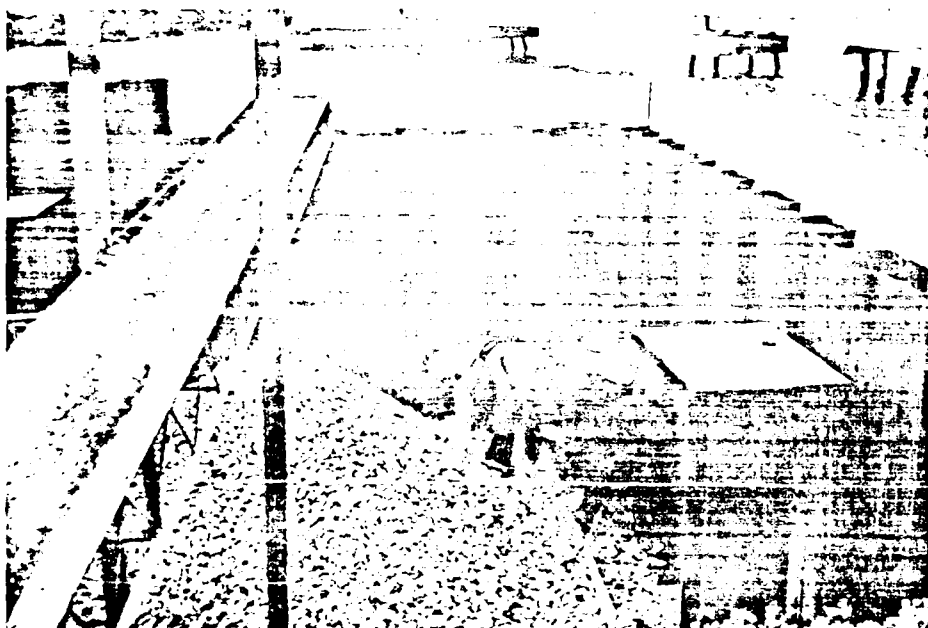


NEW NORTH DOLPHIN
Welding the Corner Tie Rods



NEW NORTH DOLPHIN

Looking North at a 16-Inch Conveyor Positioned to Place Crushed Stone. Note Sheet Piles Cutoff to Uniform Elevations.



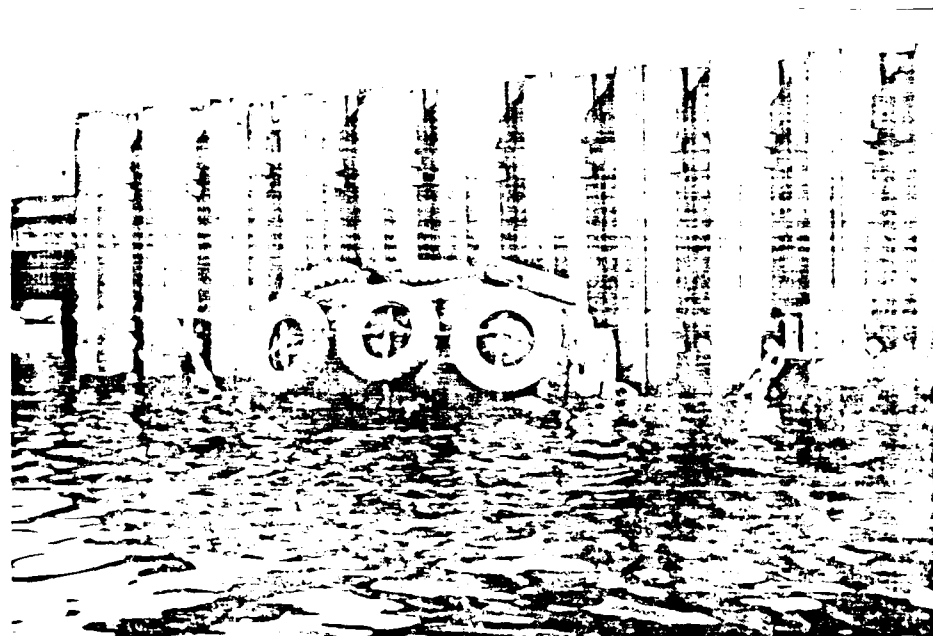
NEW NORTH DOLPHIN

Crushed Stone Fill Placed by Conveyor. The Men Are Shoveling Stone Beneath the Waller and Against the Sheetting to Fill the Voids and to Prevent Stone From Arching.



LOADING PLATFORM - TIMBER FILLER

Placing Timber Fillers, Between the Sheet Pile Flutes, at the North End of the Loading Platform, to Form a Flat Bearing Surface for the Floating Fender Units.

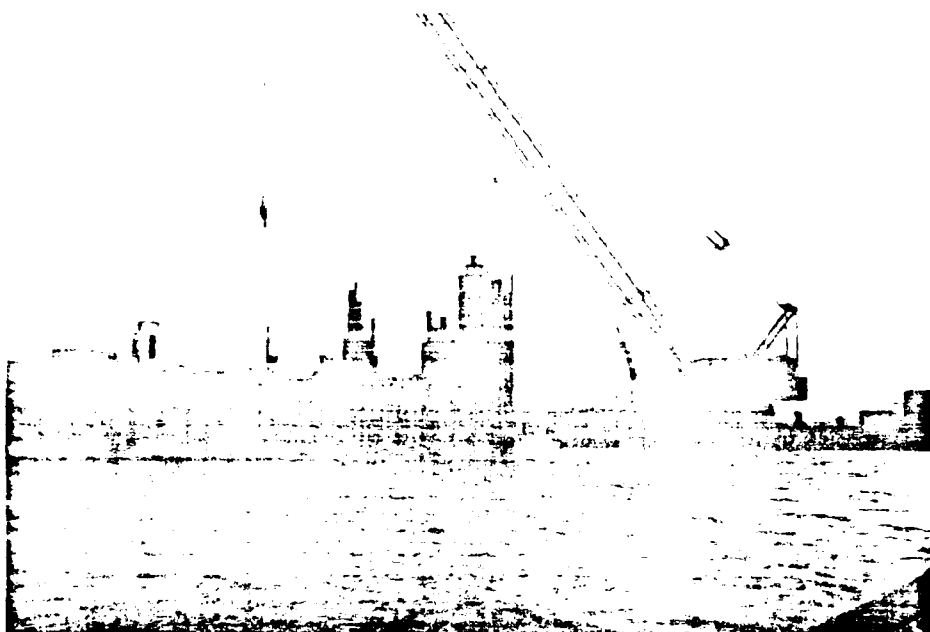


SEA CUSHION FENDER

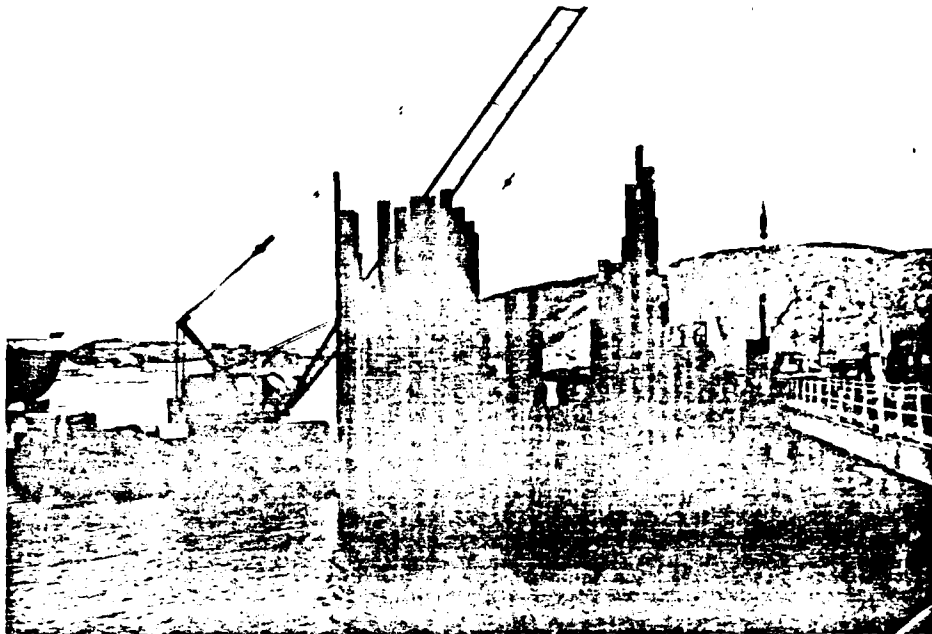
Temporary Tie Up at the New North Dolphin. Note Wire Rope Temporarily Serving as a Shackle, to Connect the Chain to the Sheet Pile Pad Eye.



NEW NORTH DOLPHIN AND LOADING PLATFORM
Overall View, Looking Southeast. Note That All
Sheeting Has Been Installed and Cut Off to Uniform
Elevations.

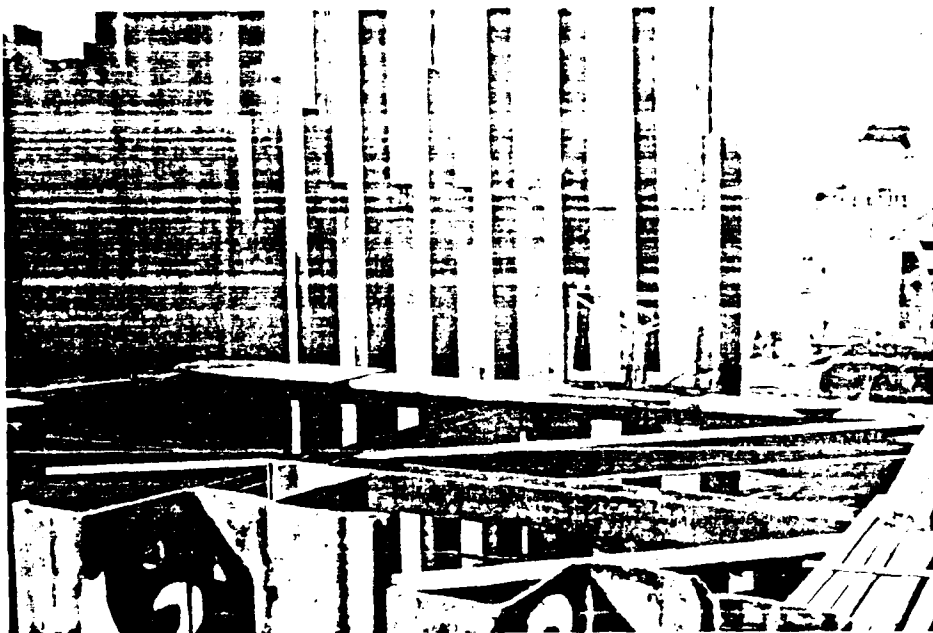


LOADING PLATFORM AND NEW SOUTH DOLPHIN
Overall View Looking Southeast. Note Uniform Sheet
Pile Cut Off at South End of Loading Platform Fen-
der Sheeting. Note Non-Uniform Driving and Thread-
ing of Sheet Piles for the New South Dolphin.



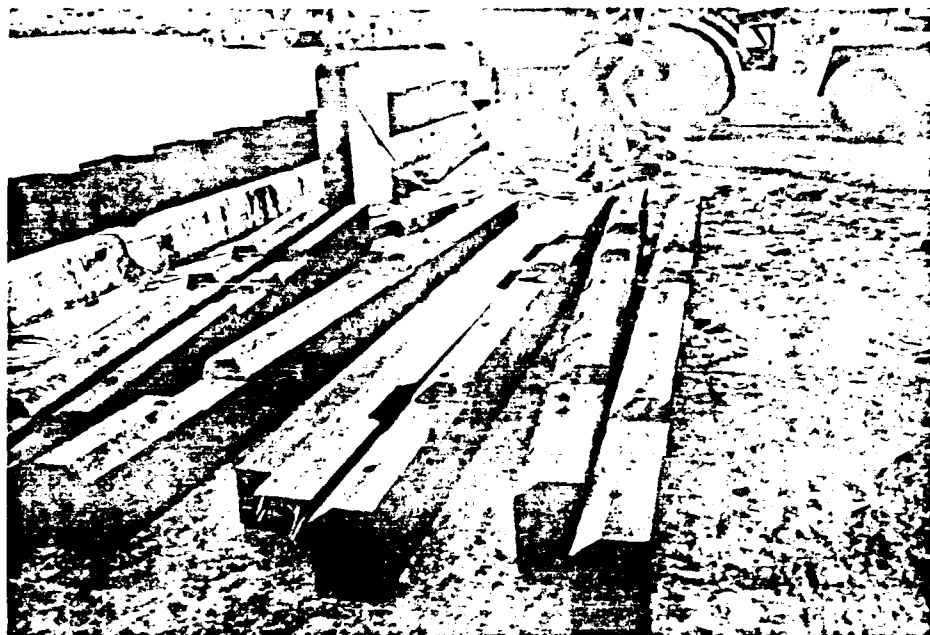
NEW SOUTH DOLPHIN

Overall View, Looking North. The North, East and South Walls Are Partially Driven. The South End of the East Wall Is "Hung Up" on an Obstruction About 5 Feet Below the Harbor Bottom.



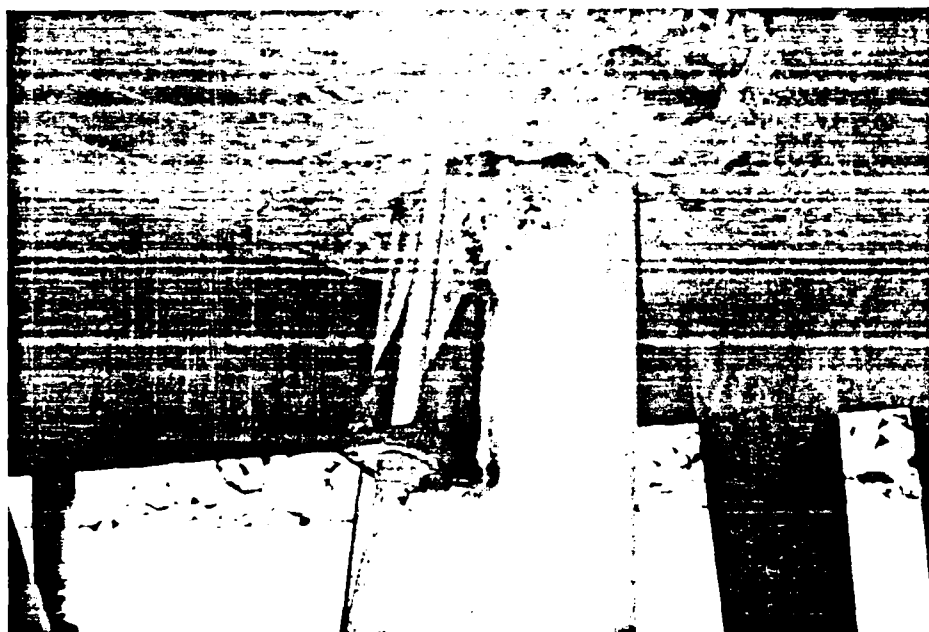
NEW SOUTH DOLPHIN

Looking West at Threading of the West Wall. The Soldier Beam Sheet Piles Are Placed First, Later, the Intervening Sheets Will Be Threaded.



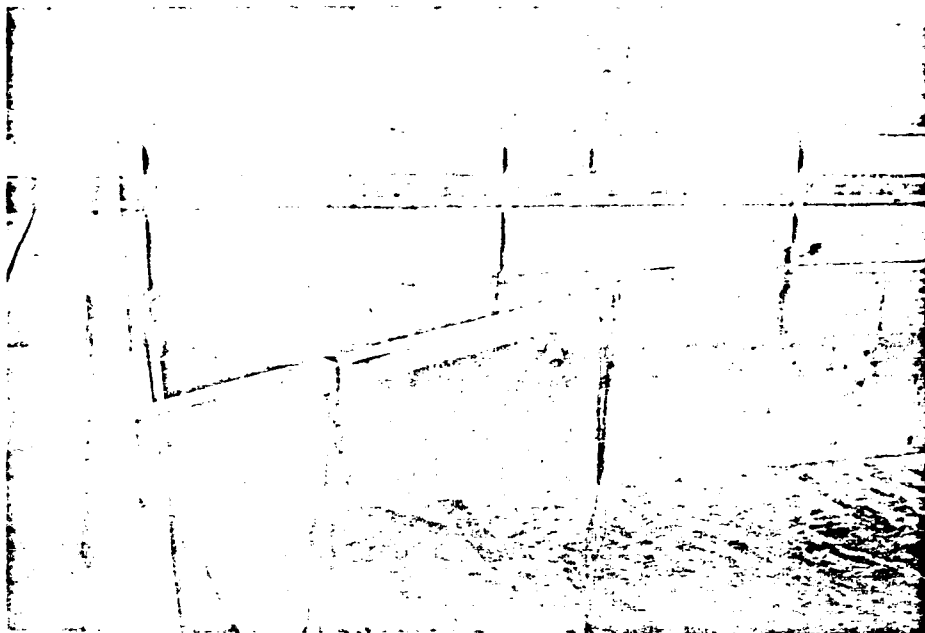
TIMBER FENDER FILLERS - LOADING PLATFORM

Timber Fillers Are Cut to Fit Around the Extended Bolts of the Steel Walers. The Cut Recesses Will Be Painted with a Wood Preservative.

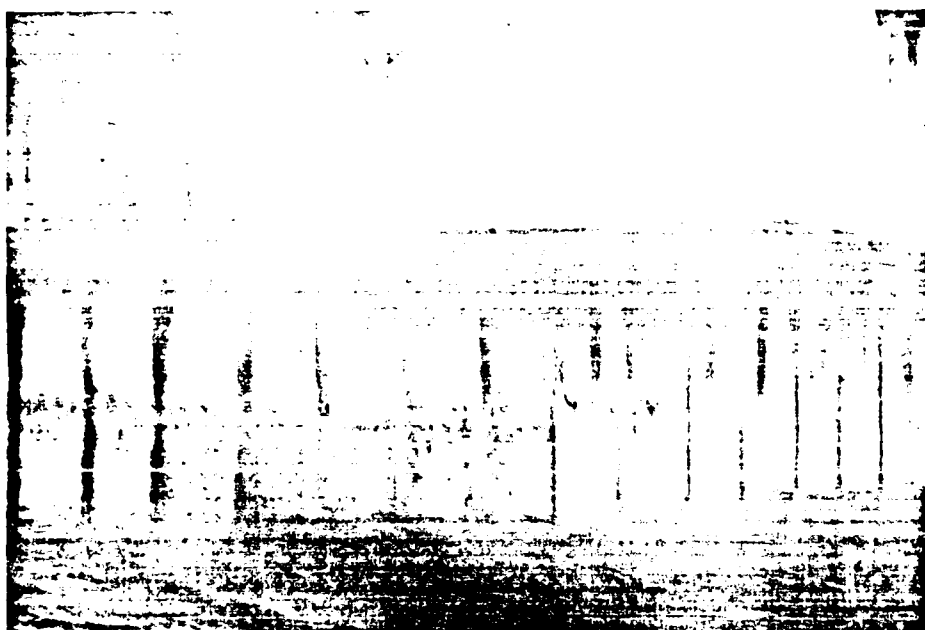


BATTER PILE TIEDOWNS - LOADING PLATFORM

New Tension Anchor Rods Tie Down the Pile Caps and Deck to Steel Brackets Welded to the West Batter Piles. Tiedowns Have Been Installed at the 5 Southern Batter Pipe Piles



SPAN NO. 2 - APPROACH ROADWAY
Longitudinal Crack in Facia Beam, About 60 Feet Long,
to Be Chipped Out and Epoxy Patch Repaired.



DOLPHIN NO. 1 - APPROACH ROADWAY
Corrosion of the Top of the Old Circular Steel
Sheet Pile Cell Has Caused Spalling of the Concrete
Slab. Cleaning and Epoxy Patch Repairs Needed.



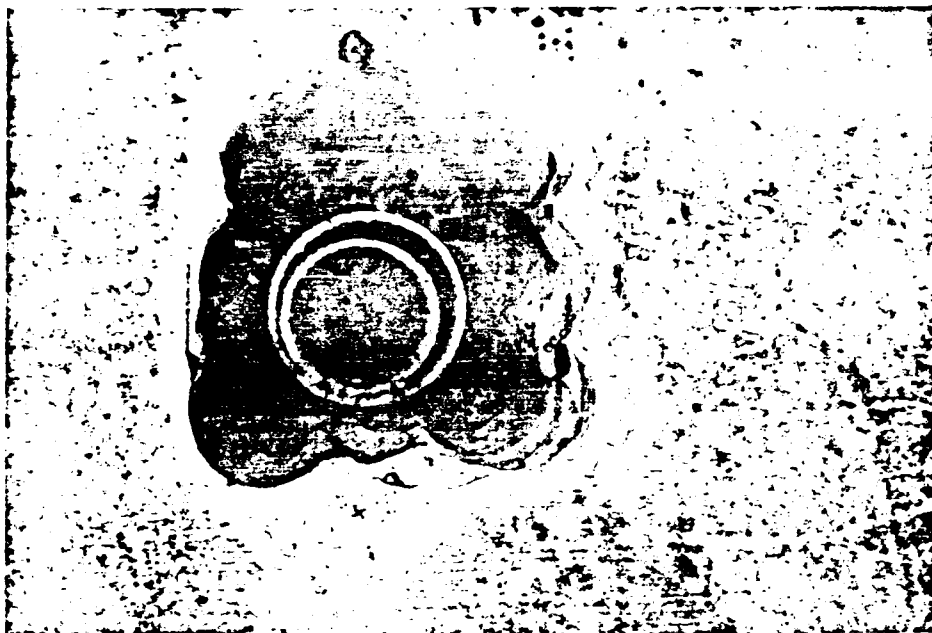
APPROACH ROADWAY

Underside of Deck Showing Cracks and Incipient Scaling. Area Will Have to Be "Probed" with a Jackhammer to Determine the Extent of Deterioration and Then Repaired.



APPROACH ROADWAY

Underside of Deck Showing Spalls, with Exposed and Corroded Reinforcement. Note Adjacent Circular Scaling Starting to Form.



ROCK ANCHORAGE

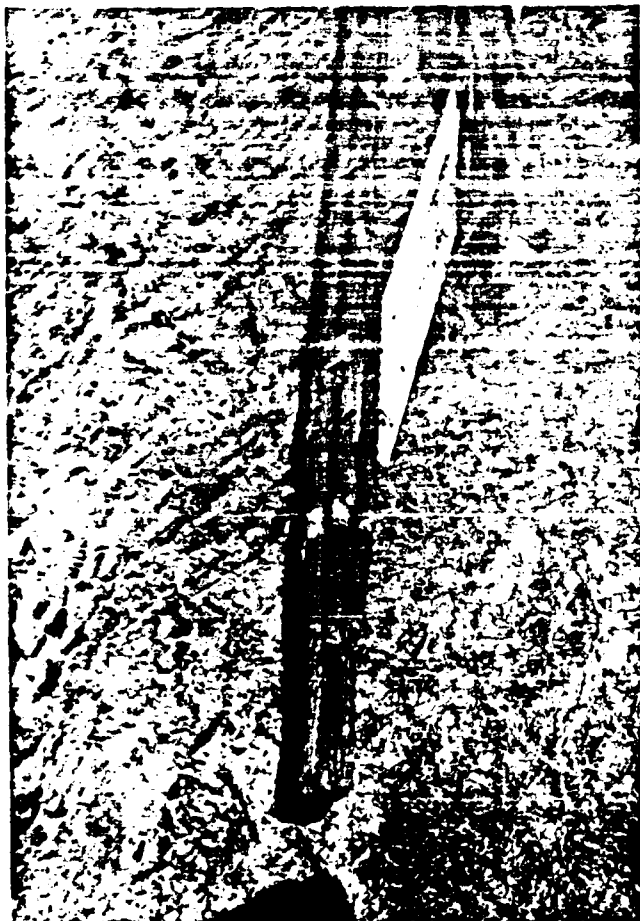
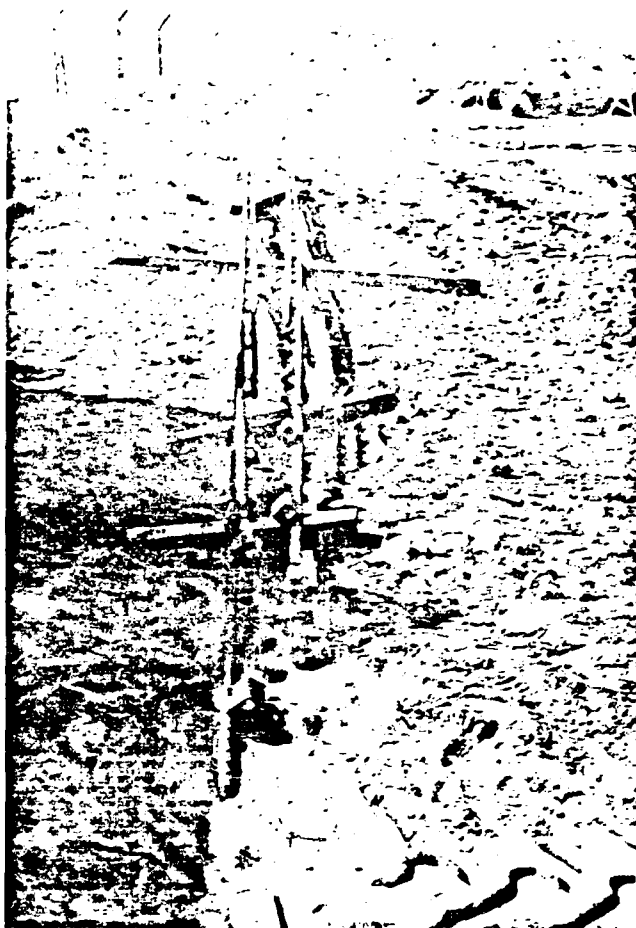
Dolphin No. 3 - Center Anchorage with 8 Inch Casing Telescoped Inside the 10 Inch Casing. Note Smooth Drilled Concrete Cap Opening Which Will Have to Be Undercut, Roughened and Reinforced.



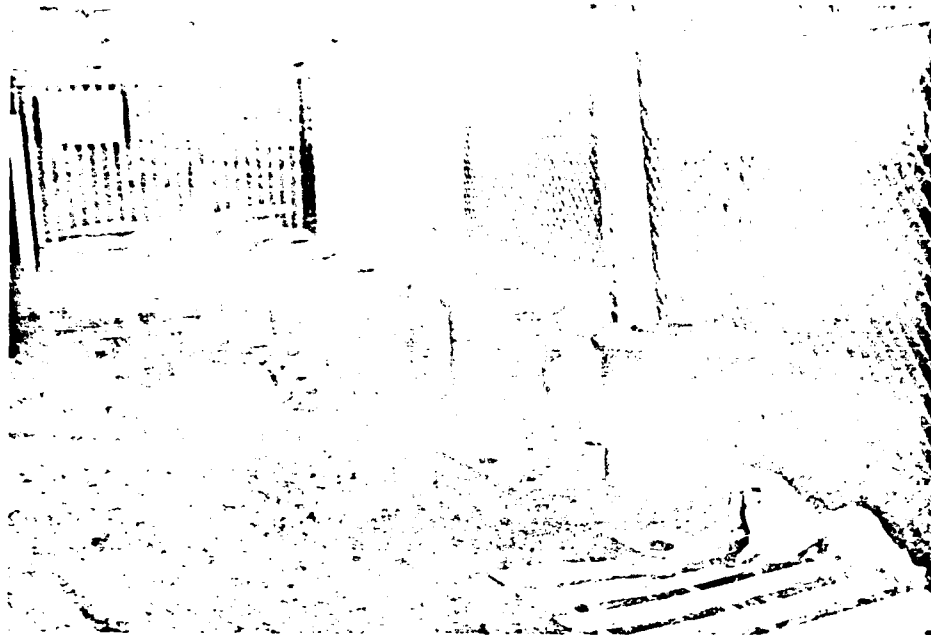
ROCK ANCHORAGES

Dolphin No. 4 - The Large Drill Rig Provides Power and Weight to Hold Down the Cantilevered Extension on Which the Small Drill Rig Sits, to Drill a Battered Rock Anchorage

ROCK ANCHORAGE
REINFORCING CAGE
General View Showing Staggered
4 Bars, with Total Length of
About 40 Feet

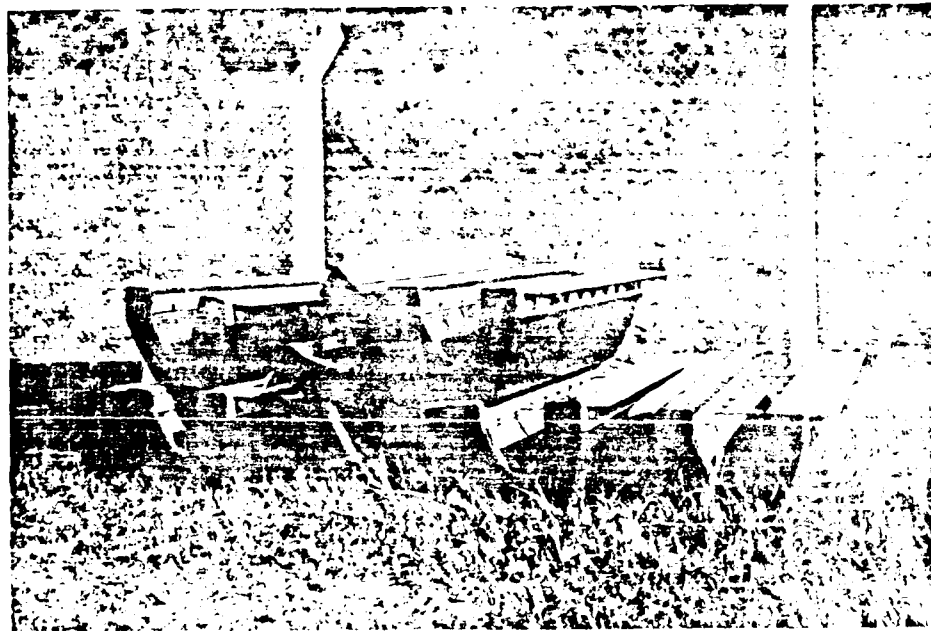


ROCK ANCHORAGE
REINFORCING CAGE
View of the Tip, Where the 4
No. 11 Bars Converge. Entire
Assembly Will Have to Fit Into
a 6 or 8 Inch Diameter Hole,
15 Feet Long, Drilled Into
Bedrock.



DOUBLE BITTS FOR MOORING

Stored on Shore, to Be Installed at the New North
and South Dolphins



DELTA RUBBER FENDERS

Stored on Shore, to Be Installed at Dolphin No. 4

POL PIER REPAIRS
LAJES FIELD, AZORES
CONSTRUCTION INSPECTION VISIT NO. 3
SEPTEMBER 25 TO OCTOBER 3, 1980
CONTRACT NO. N-62477-79-C-0021
MODIFICATION P-00001

S. M. Olko arrived at Lajes Field, Azores on September 25, 1980 and inspected construction progress of repairs to the POL Pier, leaving Lajes Field on Friday, October 3, 1980. This was the third Construction Inspection Visit.

PERSONNEL

The following military and Contractor's personnel were met during the Site Visit:

Lt. Col. David Brooks	Base Civil Engineers
Mr. Roy Hatfield	Base Civil Engineers
Mr. Thomas Hayes	Base Civil Engineers
Capt. Edward Domique	Base Civil Engineers
Lt. David Riker	Base Civil Engineers
Mr. Jack Barrett	Base Civil Engineers
Capt. Richard T. Weeks	U. S. Army Corps of Engineers, Construction Inspection
Mr. Raymond Armbrust	NAVFAC Norfolk, Virginia, Construction Inspection
Col. Nelson Maier	Army Transportation Terminal Unit
Maj. Peter Ferguson	Army Transportation Terminal Unit
Mr. Boysen Petersen	DANAC, Inc., General Manager
Mr. Heinz Linde	DANAC, Inc., General Foreman

Mr. Ole H. Sorensen, the DANAC, Inc. Construction Superintendent, was on leave during the visit. He is the most familiar with the detailed records of the POL Pier repair construction. Accordingly, some information was not readily available because of his absence.

Also, Mr. Earl W. Dennison, the Foreman from New Jersey Drilling Co., in charge of drilling the rock anchorages, was on leave in the U. S. A. Many details, concerning the rock anchorage drillings, were not available during the visit because of his absence.

Both Messrs. Sorensen and Dennison were expected to return to the job the following week, commencing Monday, October 6, 1980.

GENERAL WORK PROGRESS

Previously, Site Visit No. 1 was made during April 16-18, 1980, followed by Site Visit No. 2 during July 21-27, 1980. During the first visit, the Contractor was still organizing the work, drilling a rock anchor and preparing for the 100-Day Pier Shutdown Period. Whereas, during the Second Visit in July 1980, the major work was in progress and the 100-Day Pier Shutdown Period had commenced. During the Second Visit, the Contractor installed pipe casings for rock anchorages at Dolphin No. 2 and partially installed casings at Dolphin No. 3. Also, the North Dolphin cell driving was in progress and four of the

southernmost batter pile bents, at the Loading Platform, had been chipped out at the deck for installation of the tiedowns. In addition, some of the Approachway spalled concrete had been repaired, during the July visit.

The 100-Day Shutdown Period for Pier repairs officially ended Thursday, September 25, 1980; whereas the official contract completion date is Tuesday, October 7, 1980. Accordingly, for the record, the following is the general status of construction, as of Friday, October 3, 1980, when S. M. Olko left the Azores.

Dolphin No. 2: Installed all pipe casings and completed coring into bedrock for the three rock anchorages.

Dolphin No. 3: Installed all pipe casings and completed coring into bedrock for the three rock anchorages.

Dolphin No. 4: Installed three pipe casings and completed coring into bedrock for three of the six rock anchorages.

North Dolphin Cell: Sheet pile driving was completed. The sheet piles had been cut off to elevation. All walers and tierods had been installed and the crushed stone fill had been placed to about the level of the tierods.

South Dolphin Cell: The north, the east and the south walls of the South Dolphin had been threaded and partially driven. Some sheet piles, at the southeast corner of the east wall, were hung up on an "obstruction". The west wall was being threaded, placing soldier beam piles only.

Loading Platform: All sheet piling had been driven in front, for the fender system, and the waler system had been installed.

Pile Tiedown: The five western batter piles, at the south end of the Loading Platform had been tied down with tension tierods, embedded in the concrete deck.

Approach Roadway Spalled Concrete: Concrete repairs had been completed to the undersides of Approach Spans Nos. 1, 3 and 5, as shown on the Contract Drawings.

Sea Cushion Fenders: Six of the eight Sea Cushions were in the water, temporarily connected to the North Dolphin and the Loading Platform.

The work accomplished since the Second Inspection Visit of July 1980 is less than anticipated. It was expected that all rock anchorage drilling would be completed. Also, all 10 pile tiedowns and pressure grout repair of cracks at the Loading Platform were to be completed.

GENERAL WORK REMAINING

To better understand the status of job progress, the following is a brief summary of the construction work remaining.

Dolphin No. 2: Installation of the reinforcing cages and concrete grouting of the pipe casings and cap opening at all 3 anchorages.

Dolphin No. 3: Installation of the reinforcing cages and concrete grouting of the pipe casings and cap openings at all 3 anchorages.

Dolphin No. 4: Installation of pipe casings and coring into bedrock for three additional rock anchorages. Then, all six rock anchorages require installation of the reinforcing cages and concrete grouting of the pipe casings and cap openings.

North Dolphin Cell: Complete filling the cell with crushed stone, allow time for settlement, place the concrete cap, the steel sheet pile cap, the mooring bitts, the light tower and permanently attach the Sea Cushion fenders.

South Dolphin Cell: Complete the threading of the west wall, drive all sheeting, cut off, install walers and tierods, fill the cell with crushed stone, allow time for settlement, place the concrete cap, the steel sheet pile cap, the mooring bitts, the light tower and permanently attach the Sea Cushion fenders.

Loading Platform: Place the steel sheet pile cap, install timber filler pieces between the Z sheets, permanently attach the Sea Cushion fenders.

Batter Pile Tiedown: Install tension ties at the five west batter piles, at the north end of the Loading Platform. Epoxy pressure grout all cracks in the concrete deck and cap beams, at the south end of the Loading Platform.

Approach Roadway Spalled Concrete: Repair the fascia beam crack at the north end of Span No. 2 and, as extra work, repair additional concrete spalling that has developed, on the underside of the Approach Roadway slabs, after the Contract Plans and Specifications had been prepared.

Concrete Patches: Patch all spalled concrete areas on the Loading Platform and at Dolphin No. 4.

Dolphin No. 4 Fendering: Install the Delta type rubber fenders.

Electrical Work: Install all wiring, lighting and cathodic protection.

Paint and Touchup: Required on all damaged surfaces and new construction, for corrosion protection.

Considerable work remains. In addition, further delays can be expected because of worsening weather and potential interference by ships berthing at the Pier, since the 100-Day Shutdown Period is over.

FUTURE SHIP BERTHING

Ships berthing at the POL Pier will interfere with the Contractor's progress and therefore, the future scheduling of ships is of prime importance.

The 100-Day Pier Shutdown Period officially ended on Thursday, September 25, 1980 and on that same day the "World

Promise" arrived, to unload about 41,000 bbls. of diesel oil. The ship departed on Friday, September 26, 1980.

The second vessel to arrive was the "Gulf Trader", on Monday, September 29, 1980 and departed on Tuesday, September 30, 1980. This ship took on cargo from Lajes, namely automobiles, personal effects, etc. and was berthed in midstream, about 250 ft. off and parallel to the POL Pier. It did not interfere with the construction. It was tied, to bow and stern harbor mooring buoys but, due to strong broadside winds, one of the buoys was dragged about 100 yards. Unfortunately, because the rock drilling rig was on top of Dolphin No. 4, a breasting line could not be tied to the Dolphin to resist the beam wind.

It is intended, however, to berth only the tankers at the Pier, unloading fuel. Whereas, the general cargo vessels will be berthed in midstream, loaded or unloaded, using the LCM's as lighters, provided the weather permits such operations. The TTU Group is cooperating in this matter, to facilitate the Contractor's work.

The future ship schedules are as follows, subject to changes, which occur frequently.

On October 9, 1980 the "Ex Champion" is scheduled to bring in about 1,700 measurement tons of cargo. It will be unloaded in midstream. It will not interfere with the POL Pier work, weather permitting.

On October 10, 1980, the "Louisiana Getty", a tanker, is scheduled to arrive to unload 180,000 bbls. of JT-4 jet

fuel, plus 6,000 bbls. of Mo-Gas. It will berth at the Pier. The Contractor will have to stop work at the Pier.

On October 30, 1980 a vessel will arrive to take on cargo from Lajes; presumably it will berth in midstream and will not interfere with the Contractor's operations, weather permitting.

On December 5, 1980 an unnamed tanker will berth at the Pier, unloading 100,000 bbls. of JT-4 jet fuel, plus 30,000 bbls. of diesel oil, plus 4,000 bbls. of Av Gas, plus 3,000 bbls. of Mo-Gas. The Contractor will have to stop work at the Pier.

It is to be noted from the above, that between the berthings of October 10, 1980 and December 5, 1980, the Contractor should experience relatively little interference from ship berthings. This is an unanticipated advantage to have such a relatively long period of free time (almost 2 months) similar to the Pier Shutdown Period of 100 days.

The ship schedules change frequently. In fact, during this Third Inspection Visit, changes occurred. Also, presently unknown ships could be scheduled to Lajes. In fact, Messrs. Sorensen and Dennison were not at Lajes during this Third Inspection Visit because ships were scheduled to arrive, which would have prevented work on the Pier. However, the voyages were later cancelled or changed, permitting the work to proceed, but the men were already on leave, during the presumed "no work" period.

GENERAL TIME SCHEDULE

Informal discussions with the Contractor resulted in no firm conclusions regarding the future Time Schedule. The

Contractor must now prepare a new Time Schedule, taking into account the present status of work, the future ship berthings, allow realistic time for weather delays and other factors.

It is understood that the Contractor had, some--time earlier, indicated to the Base Civil Engineers Office that the job would be finished around November 19, 1980. In subsequent informal discussions, the Contractor indicated that construction would be completed around the first week in December.

Considering all factors, plus past performance, it is believed that a more realistic schedule is completion of the work in mid-January 1981.

In this connection, the \$115 per day of liquidated damages for delayed construction, after October 7, 1980, must be evaluated. The Contractor did indicate that, in connection with two forthcoming claims, there would be a request for 39 days extension, which would bring the completion date up to November 15, 1980, on an "official basis" - if the claims are approved.

TIME DELAYS BY GOVERNMENT

The Contractor mentioned that delays have resulted because the Government fuels up equipment during normal working hours, rather than performing such operations in advance of the work day. However, the Specifications state the hours the Gov-

ernment will work and operate its equipment to assist the Contractor. Consequently, this is not a valid complaint by the Contractor.

The Government is cooperating, particularly the TTU Group, by berthing general cargo vessels in midstream, rather than at the Pier, thereby allowing the Contractor to continue working, without interruption.

Also, the TTU Group has worked two cranes on shore, to assist the Contractor, rather than using only one crane, as originally stipulated.

Nevertheless, the Contractor indicated that a claim for 30 days extension would be requested for delays that are related to nonavailability of materials on schedule from Bayonne, New Jersey. Also, nine days extension would be requested because of the 7,5000 lb. load limit placed on the TTU crane (mounted on the LCM). These time extension requests will have to be evaluated at a future date, when the claim details are officially presented.

FUTURE WORK SEQUENCE

The Contractor will prepare a detailed time schedule, for future work. But, from informal discussions, it appears that the present concept is to proceed on the following general basis.

1. The driving of the South Dolphin sheet piles and completion of the drilling of rock anchorages at Dolphin No. 4 will be accomplished as soon as possible, starting the week of October 6, 1980.
2. Epoxy pressure grouting repairs of the cracked southern portions of the Loading Platform will commence after the South Dolphin sheet piles are threaded. The sheet piles are presently lying on the Loading Platform deck, interfering with grouting operations.
3. The North Dolphin will be filled with crushed stone after the October 10, 1980 berthing of the "Louisiana Getty."
4. Placement of the reinforcing cages and grouting of the rock anchors, at Dolphins Nos. 2, 3 and 4, will be accomplished after the new South Dolphin is filled with crushed stone, because of problems of access.
5. The five north batter piles, at the Loading Platform, will be tied down after the North Dolphin concrete cap is placed, because of interference with access.
6. Repairs to the underside of the Approach Roadway and electrical work will be accomplished whenever feasible, generally after other work is finished.

The overall work sequence must be evaluated when a detailed schedule is submitted by the Contractor, to make certain that the technical conditions of the Specifications are followed, in terms of work sequence. Until that detailed schedule becomes available, it is difficult to comment further on the Contractor's plans.

Potentially affecting the scheduling of work is the fact that DANAC has reportedly received six more contracts at Lajes. It is understood they are relatively small contracts, beginning in about half a year. There may be a tendency by DANAC to proceed with the POL Pier work with minimum forces,

pay the \$115 per day liquidated damages, so as to maintain continuity with the present work force, for the future new work. On the other hand, if the other contracts are let at an earlier date, there would be an incentive for DANAC to hire more people now, for the POL Pier repair, then continue employment on the new contracts.

Since DANAC has other contracts in progress at Lajes, there is the possibility of shifting around personnel, dependent on establishing priorities between their various projects.

The future work sequence and schedule proposed by DANAC will most probably consider all ongoing contracts, plus the scheduled new projects. This is necessary because of the limited supply of skilled personnel, and the employment contract conditions, as later described.

WORKING HOURS

The men work either a 10- or a 13-hour shift six days a week, from Monday to Saturday. There is a rotational system, where some work 10 hours one day and 13 hours the following day. However, all work a 6-hour shift on Sunday.

The work commences at 7 in the morning and there are one hour lunch and dinner periods. Sunday is worked for six continuous hours.

CONTRACTOR'S WORK FORCE

DANAC has 30 people on the job, including Mr. Petersen, the General Manager, and Mr. Dennison, the subcontract driller, representing New Jersey Drilling Co.

Three of the people are Danish, namely Messers. Petersen, Sorensen and Linde. Mr. Dennison is American, and there is a young American laborer. Otherwise, the working force is either Azorian or Portuguese. In general, the Azorians are unskilled, common laborers, whereas, the Portuguese are skilled.

Altogether, there are 27 "working" people. The breakdown consists of 6 men on the barge with the 60-ton crane, 8 men on sheet pile driving, 5 men for various steel work, such as welding of soldier beam piles. Next, there are 2 men installing the timber fendering systems. There is one mechanic and also one warehouse helper. Finally, on the rock anchorages, there is Mr. Dennison, plus 3 men. Altogether, this adds up to 27 men, making up the full-time work crews.

LABOR CONTRACT AND WAGES

In order to better understand the Contractor's operations and future scheduling of work, it is of interest to describe the Contractor's labor situation.

Danac has generally entered into one half year contracts with its individual personnel. On this basis, they do

not have to comply with other Portuguese regulations concerning termination of work, etc. It is understood that a half year contract is the shortest time allowed by law. Accordingly, DANAC has to schedule the work of individuals for one half year periods as otherwise, they are obligated to pay the full contract time, if the work terminates earlier than half a year. This is accomplished by DANAC in that they try to reschedule men for work on other projects at Lajes, where they have contracts.

The basic wage is approximately a dollar an hour and there is only about a 15 percent differential between a skilled and unskilled laborer.

The approximate \$1 per hour does not include "benefits" and the living expenses paid by DANAC for personnel from Portugal, or their airplane fare, hospitalization, etc.

It is understood that the Azorian laborers pay full taxes on all earnings. Whereas, those from the Portuguese mainland, pay tax only on straight time, for a 45 hour week. All overtime work for the Portuguese laborers, including overtime premiums, is tax free. Consequently, the Portuguese component of the work force is very much in favor of overtime work because of added premiums, plus absence of taxes. Whereas, the Azorian component has less incentive to work overtime.

The normal work week is 45 hours, consisting of 5-day week, 9 hours per day. However, the overtime premium is

50 percent for an additional two hours; then it increases to 75 percent for four additional hours per day. However, for work on Saturdays and Sundays, the premium is 200 percent over the basic hourly wage. In other words, about \$3 per hour is the average wage for Saturday and Sunday.

These factors influence the scheduling of work in terms of retaining personnel, hiring locally or from Portugal, and working overtime. They are evaluated by DANAC in developing the overall scheduling of work.

WEATHER DELAYS

It is understood that between the Second and Third Site Visits, namely during the months of August and September 1980, there was only about one week when the weather was bad and caused significant construction delays.

During this Third Site Visit, weather conditions prevented working with the crane-mounted barge, because of waves and swells for three days, namely September 30 to October 3, 1980. The winds, about 25 MPH from the northeast and east, stopped threading of sheets. The offshore swells, about 10 feet high, broke on the breakwater but resulted in 2 foot high swells inside the harbor. This prevented using the crane, mounted on the barge, because of excessive movement of the boom end.

Such weather is a good example of possible interference with driving of the sheet piles at the South Dolphin.

PRESENT MATERIALS AND EQUIPMENT

The equipment on the job is the same as generally described during the Second Inspection Visit of July 1980.

For the record, the drilling rigs for the rock anchorage are Ingersoll Rand. The larger rig is a DM 3Rd, whereas the smaller model is a DRD2.

The Contractor will require some additional crushed stone for filling of the South Dolphin, but this is apparently no problem, with respect to obtaining such material.

The Contractor is still lacking shackles for the Sea Cushion fenders. These are the shackles between the sheet pile and chain and between the fender unit itself and the chain. Altogether, since there are 8 Sea Cushion fenders, they are missing 16 shackles. These will soon be delivered from Bayonne, N. J., but meanwhile, the fenders are tied using wire rope, as shackles.

STEEL BARGE

The steel barge, fabricated by the Contractor, was functioning satisfactorily, supporting the 60-ton crane.

It is understood that the Contractor considered the fabrication of the barge as representing 21 percent of the

cost of all sheet pile cell dolphin work and fendering system. This percentage pertains to payments for partial completion of work.

RETURN OF EQUIPMENT TO U. S. A.

It appears that the Contractor will not return any major equipment to the U. S. A.

The 60-ton crane may be sold to either the Air Force or to another local contractor. This would be advantageous to a local contractor as the crane has not had much use but has a decreased valuation with respect to import duties, etc. It can be sold as a "used crane". Also, it appears that the barge will be sold locally, or to contractors at other islands in the Azores.

Apparently, the only major equipment that will return to the U. S. A. will be the two drilling rigs that were brought over by New Jersey Drilling Co. for the rock anchorage work.

ROCK ANCHORAGES

Rock anchorages are to be installed at existing Dolphins 2, 3 and 4 to resist added loads from future larger vessels. The basic construction consists of jack-hammering or drilling an opening in the dolphin concrete cap, installing a 10 inch steel pipe casing into the harbor bottom, then, an 8 inch pipe is telescoped through the 10 inch to bedrock,

cleaned out, using an 8 inch bit, followed by coring either a 6 or an 8 inch hole into bedrock, for the reinforcing steel cage anchorage, which will extend from the grouted hole in the bedrock, up to the top of the pile cap.

All together, a total of 12 anchorages are to be installed. The general status of work is that installation of pipe casings and coring into bedrock has been accomplished for the 3 anchorages at Dolphin No. 2 and also for the 3 anchorages at Dolphin No. 3. However, at Dolphin No. 4, only 3 of the 6 pipe casings with rock corings have been installed. Three more casings and corings are required at Dolphin No. 4. Later, the cages will be placed and grouting will proceed.

The 10 inch casing has an inside diameter of 10 inches and a wall thickness of 5/16 of an inch. It is epoxy coated on the exterior for corrosion protection. Whereas, the 8 inch casing has an inside diameter of 8 inches and a wall thickness of 5/16 of an inch. It is uncoated.

The first 2 casings installed on the job at Dolphin No. 2 (center, and south anchorages) were core drilled 6 inch diameter and 15 feet into bedrock. All other casing installations, beginning with the north anchorage at Dolphin No. 2, have been 8 inch diameter cored into bedrock, also for 15 feet of length.

Messrs. Sorensen and Dennison, who are the most familiar with the rock anchorage work, were not at Lajes during this site visit and therefore, precise detailed information concerning the past anchorage installation and drillings was not available. However, after reviewing some of the notes in the field office, the following is an overall summary of the rock anchorage casings installed to date, subject to verification by Mr. Sorensen at a later date. The tabulation gives the sequence of installation for Dolphins Nos. 2 and 3, but the sequence for Dolphin No. 4, for the 3 installations to date, is not known. The lengths of the casings are given along their batter, measured from the top of the concrete cap, to the bottom of the casing.

ROCK ANCHORAGES, CASING AND ROCK CORE SUMMARY

Dolphin No.	Location	Length of 10 Inch Casing (ft.)	Length of 8 Inch Casing (ft.)	Batter Slope	Rock Core Dia. X Length
2	Center	?	117	1.75/1	6 in. x 15 ft.
2	South	?	129	1.75/1	6 in. x 15 ft.
2	North	?	126	1.75/1	8 in. x 15 ft.
3	South	66	129	1.75/1	8 in. x 15 ft.
3	Center	85	137	1.75/1	8 in. x 15 ft.
3	North	69	133	1.75/1	8 in. x 15 ft.
4	Center-East	82	112	1.75/1	8 in. x 15 ft.
4	Center-West	82	104	1.30/1	8 in. x 15 ft.
4	Southwest	83	118	1.75/1	8 in. x 15 ft.
4	Southeast	Next Installation			
4	Northwest	Future Installation			
4	Northeast	Future Installation			

The drilling on Dolphin No. 4 is presently being accomplished with the large rig serving as both a counterweight and source of power for the smaller rig, out on steel beams, cantilevered over the concrete cap, drilling at a batter.

Prefabrication of the reinforcing cages is now in progress using Grade 60 reinforcing rods. The lower sections are being welded up with 4 reinforcing rods and prefabricating the next section to fit the lower one, taking into account staggered splicing of the reinforcement. The longest reinforcing rod in any individual section is about 40 feet.

The general procedure will be to insert the first reinforced prefabricated section into the 8 inch pipe casing, then weld in the field the second section, lower it down and then weld a third section, lowering everything to the bottom of the bedrock corehole. All sections will have to be correctly numbered, so as to fit.

All together, 4 reinforcing cage sections, each about 40 feet long, have been prefabricated, as of October 3, 1980.

The installation (driving) of the casings and core drillings will continue - when Mr. Dennison of New Jersey Drilling Co. returns from the U. S. A., probably Monday, October 6, 1980.

In discussions with the Contractor, it was emphasized that before the reinforcing cages are lowered into the casing and core hole, the entire installation has to be thoroughly flushed clean of any debris, rock cuttings or soil. The Contractor plans to accomplish this with a compressed air jet.

It was also emphasized that where openings in the concrete caps were made by drilling a series of holes, it will be necessary to undercut and roughen the concrete surface and expose the reinforcement for splicing. This will ensure a good bond with the reinforcement and with the concrete filling the opening in the cap.

The Contractor intends to place the cages into the casings and then grout the rock anchorages, after the South Dolphin is filled with crushed stone. The reason for this delay is to minimize interference between the two operations.

Underwater obstructions have not been encountered, during the installation of the 3 casings at Dolphin No. 4.

BATTER PILE TIE DOWN AT LOADING PLATFORM

All 10 west batter piles of the Loading Platform are to be tied down by means of steel brackets, tightened by 1-1/4 inch diameter anchor rods.

During the previous Second Visit in July 1980, the Contractor had chipped out the deck at the 4 southernmost

batter piles, bents 13 to 16 inclusive. Later, the Contractor chipped out the 5th pile at Bent No. 12, then positioned all angle brackets, installed the tie downs and patched up the top of the deck where the five angle pockets had been chipped out. It is to be noted, however, that epoxy grouting of cracks has not been accomplished, nor has there been any chipping of the cap beams to expose the void over the batter pile. Also, no work has been done on the 5 northern batter piles of the Loading Platform.

It was emphasized to the Contractor that there exist voids over the west batter piles, at the 5 southerly bents of the Loading Platform and that these voids must be pressure grouted for firm bearing of the concrete caps, back on the piles. The concrete caps had been lifted off the batter piles, by a ship ramming, a few years ago, which cracked the south end of the Loading Platform.

The Contractor was questioned if, when tightening the tie down, the deck "pulled down", and whether they assisted this operation by placing a truck or other heavy load on top - in accordance with the Specifications. Since Mr. Sorensen was not present, it was not certain that this procedure had been employed. Accordingly, it was emphasized that when the bottoms of the cap beams are chipped out, to expose the voids over the batter piles, this procedure should be repeated.

The tie rod brackets, welded to the five southerly pipe piles of the Loading Platform, were inspected from beneath by boat. The installations seemed satisfactory.

It is expected that work on the north batter piles will commence later, after the North Dolphin has been completed, to minimize interference with other operations.

EPOXY PRESSURE GROUT REPAIRS OF LOADING PLATFORM

The Contractor has to pressure grout repair the cracked cap beams and deck slab of the Loading Platform, particularly at the southern half. This work has not commenced.

As mentioned above, it was emphasized to the Contractor that the void above the batter pile has to be grouted.

Discussions were held concerning the importance of skilled personnel doing the pressure grouting work. It will be difficult to take corrective action if the initial grouting is not accomplished properly. Section 8.2 of "Concrete Rehabilitation" requires that the work be accomplished under the supervision of a skilled and experienced person. Mr. Petersen stated that both Messers. Sorensen and Linde were skilled in such work, and their qualifications would be submitted.

Epoxy grout sealing of the cracks at the Loading Platform was to have been accomplished within the 100-Day Pier Shutdown Period. This was not done. However, since there was no chipping out of the pile caps, the Pier was not "weakened"

before the first berthing. The matter is therefore of little consequence. However, the Contractor must now return, chip out and expose the void over the 5 southern batter piles, push and pull down the deck (to the extent practical) and proceed with the work in accordance with the drawings and specifications.

HARBOR BOTTOM ELEVATIONS

Harbor bottom elevations were taken during the previous July 1980 Inspection Visit and it was determined that the harbor had silted in about 3 feet, between January 1979 and July 1980.

Harbor bottom elevations were not discussed during this Inspection Visit, and the Contractor made no mention of any added construction difficulties, etc. because of higher elevations.

Since there is a long range program to deepen the harbor, soundings should be made across the turning basin and channelways. The higher harbor bottom will affect the dredge quantities, cost estimates and budget appropriations.

NEW NORTH DOLPHIN

Driving of all sheet piling for the new North Dolphin had been completed. The sheeting had been cut off to elevation, but still lacked the steel channel cap on top. Inside the cell, crushed stone had been placed to about the level of

the tie rods, with additional stone at a higher elevation on the south side.

The tie rods had been wrapped with the corrosion protection tape. The exterior surfaces (water side) of the sheet piling had been epoxy painted twice, to cover up chafings and abrasions.

During the visit, the Contractor was welding the corner tie rods at the north end of the cell. These should have been installed before the cell was filled with any crushed stone. However, the cell is not distorted and therefore the matter is now academic.

During the visit the Contractor continued placing crushed stone in the cell. This was accomplished with a one to 1-1/2 cubic yard hopper, feeding onto a 16 inch wide conveyor belt, about 40 feet long, extending out into the cell, dumping the crushed stone. The Contractor was cautioned to make certain that stone is placed beneath the walers and along the sides of the sheeting. Otherwise, the stone would arch over these areas. Accordingly, workmen went into the cell and shoveled crushed stone under the walers and into the spaces between the sheeting.

It is understood that the TTU Crane assisted the Contractor by working off the Platform, installing the tie rods and waling system. This crane was rented from the TTU Group, by the Contractor, to speed up the work, prior to the end of the 100-Day Pier Shutdown Period.

It is understood that the H-piles, serving as tension piles for the mooring bitts, did have welded onto them the angle brackets which increase the tension pull-out resistance of the piles. The brackets could not be seen of course, as they are now buried in the crushed stone fill.

During the visit, two of the Sea Cushion fender units were tied up to the front, west wall, of the cell, using wire rope ties to the chains. These units served as temporary fenders, for the first ship berthing , after the 100-Day Shutdown Period.

NEW SOUTH DOLPHIN

The South Dolphin is under construction. The north, the east and the south walls of the South Dolphin have been threaded and partially driven. During the visit, the Contractor was threading the west wall of the South Dolphin.

Relatively little work was accomplished during the visit, with respect to threading of the west wall, since the weather was poor for a few days and the swell in the harbor area prevented operation of the 60 ton crane, mounted on the barge. Nevertheless, about 60 percent of the west wall was threaded, primarily the soldier beam piles, leaving the normal Z piling to be threaded later.

The sheeting at the southeast corner, on the east wall, is hung up on an obstruction, lying about 5 feet below the harbor bottom. It was reported as a buried pile, lying

at an angle. However, questioning could not confirm who had identified the obstruction, or the certainty that it was a pile. Nevertheless, dives have been made and since the upper sand in the harbor bottom is very loose, the divers were able to dig under the steel sheets and feel the tip end of the obstruction. During the visit, there were discussions about removing the obstruction, jetting, etc., but nothing was done. The Contractor attempted to organize divers, obtain firehose for jetting, but this did not materialize. There were equipment breakdowns, etc. and coordination problems which prevented work. It is understood that this hung up sheeting has existed since mid-September. Nothing was done to correct it, since the 100-Day Pier Shutdown Period was coming to a close and the Contractor believed they would not be able to operate because of the scheduled ship berthings. However, the berthings did not materialize and, in hindsight, it would have been possible to remove the obstruction and continue with driving the east wall of the cell.

During the last visit in July 1980, the Contractor mentioned the possibility of driving the South Dolphin cell from the Loading Platform, rather than from the floating barge. However, this will not be done. The South Dolphin will be constructed, using the 60 ton crane mounted on the barge.

It is anticipated that the Contractor will again rent from the TTU Group, an additional crane to assist in later placement of the walers and tie rods for the South Dolphin.

The Contractor's attention was called to the chafing and abrasion of some of the sheets, and the need to touch up with epoxy paint before the sheets are driven below the water surface. The Contractor stated that such painting would be done before driving commenced.

It should be noted that with 2 foot high swells in the harbor, the top of the crane boom moved in a 10 foot diameter circle. In addition, the south wall of the dolphin flexed and moved, a distance of about 1 to 1-1/2 feet horizontally.

It is understood from discussion with the Contractor, that only 1 sheet pile arrived epoxy coated on the wrong side. This sheet will be recoated on the job site, after sandblasting. In this connection, there were on the deck of the Loading Platform, several soldier beam piles that were badly twisted and the welds not aligned. These will not be usable and new soldier beam piles will have to be brought from shore.

The following is a brief summary of the elevations of the tops of sheet pilings, in the four walls of the South Dolphin cell, as of October 3, 1980. The sheets are about 75 feet long and the elevation of the Loading Platform deck is about +11 ft. (MLW). Accordingly, since the sheet piling is to be driven down to tip Elevation -65 ft, or lower, the top of the sheeting should be driven down to at least one

foot below the top of deck. This relationship gives an idea of how much additional driving is needed to attain design penetration.

North Wall: The center sheets of the north wall are about 4 feet above the Loading Platform deck. Whereas, at the extreme east and west ends of the north wall, the corner sheets are about 15 feet above the Loading Platform, with the adjacent 2 or 3 sheets, at the corners, about 8 feet above the Loading Platform deck.

East Wall: The pattern of sheet piles at the east wall is somewhat confusing in that at the extreme south end, the sheets are about 12 feet above the Loading Platform. Whereas, some adjacent sheets at the south end extend about 30 feet above the Loading Platform, where they are hung up on the obstruction, previously discussed. Further towards the north end of this east wall, a group of sheets are about 9 feet above the Loading Platform. Then another group is about 4 feet above the Loading Platform. Finally, at the extreme north corner of the east wall the sheets step up to about 8 feet and the northernmost corner is about 15 feet above the Loading Platform.

South Wall: Commencing from the west end and going towards the east, the first sheets are about 30 feet above the Loading Platform. Then 3 to 4 sheets are about 15 feet above the Loading Platform. Next, the majority of sheets in the middle of the south wall are about 4 feet above the Loading Platform. Finally, at the extreme east corner of the south wall, the sheet is about 15 feet above the Loading Platform.

West Wall: This wall is presently being threaded and the two-thirds southerly portion has soldier beam piles extending up about 30 feet above the Loading Platform. There are no intervening sheets. Towards the north end of this west wall about 2 soldier beam piles will have to be threaded, plus all other intervening sheets. Whereas, at the extreme north end of the west wall, the corner sheet pile extends about 15 feet above the top of the Loading Platform.

Based on the above description, the tops and tips of the piles are at varying elevations, and the Contractor has not adhered to the procedure of driving uniformly all walls in flights. This was again discussed with the Contractor, same as during the previous July 1980 meeting, in that they were

trading expediency for hard driving, later - with sheets possibly out of vertical alignment and interlocks clogged with sand. In response, the Contractor again stated that their experience was that initial driving of the corners and the soldier beam piles "anchored the sheets" so that the intervening sheets drove easier. No conclusion can be reached from these discussions, as there is no practical way of comparing the actual driving condition, with what would have occurred if they had driven in level and uniform flights. The matter becomes academic, provided the sheets do attain design elevation, without excessive driving. The rectangular cell does not depend on interlock tension, as would be the case with a circular cell. However, there must be interlock to retain the crushed stone contents of the cell. In general, the matter was concluded with the Contractor stating the flights would be more uniformly evened up, to reduce the present variations in elevation. Since the sheets are driving, other than for the obstruction at the southeast end, the matter seems under control. The driving will have to be monitored and underwater inspections conducted as the work progresses. Accordingly, at this stage, the work is neither accepted, nor rejected. The Contractor is proceeding at his own risk - but, based on the North Dolphin experience, problems are not anticipated.

Inquiry was made regarding pile driving records, but in the absence of Mr. Sorensen, records were not available for review.

CRUSHED QUARRY STONE FILL

The Contractor had stockpiled onshore, immediately east of the Red Workshop, the crushed quarry stone which will be used as fill inside both the North and South Dolphins.

The stockpile onshore is about 40 feet wide at the base, 100 feet long, averaging about 10 feet in height, with slopes of 1:1. Supposedly this is sufficient fill for the remaining upper portions of the North Dolphin and for complete filling of the South Dolphin. However, the Contractor indicated that should there be a shortage, there would be no problem in obtaining additional crushed stone.

The stone is of good quality, hard, sharp and sized from about 1 to 3 inches.

It was noted in one area of the stockpile that the stone was not clean, intermixed with some sand and silt. This was also evident when some of the crushed stone was placed into the new North Dolphin, at its south end. However, the sand/silt content is insignificant, from an overall viewpoint, and apparently was concentrated in a few truck loads. It represents less than 15 percent sand and silt, in the area where it was evident.

The crushed stone is placed in the dolphin cells by chuting the material or by means of a payloader, or by means of a 16 inch wide conveyor belt 40 feet long, fed from a 1 to 1-1/2 cubic yard hopper.

The crushed stone packs very well, without compaction or vibration, and the only difficulty is to work the stone beneath the walers and amongst the sheet piles, as it has a tendency to arch.

SHEET PILE FENDERING FOR LOADING PLATFORM

The new steel sheet piling, serving as fendering for the Loading Platform, had been driven and connected with a waler to the existing reinforced concrete Loading Platform, before the 100-Day Shutdown Period expired. Also, 4 Sea Cushion fender units had been temporarily installed, secured by wire rope for the first berthing. The only missing portions of the Loading Platform fendering system are the top steel channel cap, and the timber filler pieces, needed to form a smooth bearing surface for the Sea Cushions.

The Contractor reported that the sheet piling for the Loading Platform fendering system drove very easy. This was somewhat surprising as it was thought that along the face of the Loading Platform, obstructions would be encountered, such as old timber piles from the old fendering system, debris, etc. However, these difficulties did not materialize.

The waler at the top of the sheeting is down about a foot below the top of deck. This is in general conformance (as scaled) on NAVFAC Drawing 3017706 (Sheet 27) with the waler at about Elevation +10.0 ft. (MLW) - rather than Elevation + 9.0 ft., as shown on the drawing. This change had been

made and approved during the previous July 1980 Inspection Visit.

The new pile fendering at the Loading Platform was examined in detail, from topside and by boat. The fact that portions of the sheets were not driven full depth, so as to leave openings to clear the batter piles, was confirmed from the underside of the Pier, looking down into the water, with entry of light from outside.

The inspection revealed, however, that considerable touchup painting is required on the sheets and particularly on the walers. The top waler at Elevation +10 ft. requires the most touchup. The Contractor will have to make these corrections later.

During the visit, the Contractor started burning holes in the sheeting for installation of the timber fillers, to be located inside the flutes of the sheeting, so as to form a smooth bearing wall for the Sea Cushion fender units, as they ride up and down with the tide. The Contractor's attention was specifically called to the need to place preservative on the cut timber and this was later done.

As of Friday, October 3, 1980 the Contractor had installed 4 timber fillers, which fill up 2 of the Z-sheeting flutes, at the north end of the Loading Platform. This timber work will now continue to completion.

The Contractor was alerted not to burn holes in the sheet piles any larger than necessary to fit the bolt.

SEA CUSHION FENDERS

There are a total of 8 Sea Cushion fender units on the job. Each of the dolphins requires 2 units, and the Loading Platform requires 4 units.

uring the visit, 6 of the 8 Sea Cushions were in the water, floating alongside either the North Dolphin or against the new Loading Platform sheet pile fendering. Two of the units were still onshore, to be later installed at the South Dolphin.

The Sea Cushions have chains connected, but the shackles are missing between the chain and the unit itself, and also between the chain and the connection on the sheet pile. Accordingly, temporary wire cable wraps have been used.

All 6 of the Sea Cushions were in position when the first ship berthed, after the 100-Day Pier Shutdown Period (September 25, 1980). However, when the ship ("World Promise") departed, the Sea Cushions were dismantled and tied together, against the Loading Platform, so as not to interfere with other operations along the POL Pier.

The Contractor's attention was called to the need to temporarily "moor" the Sea Cushions so they would not rub

against the sharp edges of the sheeting, at the end of the Loading Platform. Accordingly, they were tied in a protected area.

The Sea Cushions will be installed in final position after the timber fillers have been bolted to the sheeting and after the missing shackles arrive from Bayonne, New Jersey.

APPROACH ROADWAY CONCRETE SPALLING

In general, the majority of repairs to the spalled concrete, along the Approach Roadway Spans Nos. 1 to 5, as shown on NAVFAC Drawing No. 3017691 (Sheet 12), had been accomplished. The only exceptions are in Span No. 2, where the cracks in the top fascia beam, of the concrete curb, at the northwest end of the span, has not been repaired. Also, the transverse crack in the top of the concrete slab, for the full width of roadway at the north end of Span No. 3, has not been pressure grouted.

The Contractor has not done any additional repair work required, resulting from deterioration that has occurred after the original inspection of January 1979. The Contractor is waiting for authorization, or a request from the Government for a proposal.

The Government has a standard procedure in requesting a proposal for the work and then negotiating a lump sum fee. However, the additional repair work required, for these Approach Roadway spans, is somewhat different in that some exploratory work is first needed, using the Contractor's equipment to deter-

mine the extent to which repairs should be made. Consequently, it is difficult to give a lump sum price without including excessive contingency. It would be better if this additional repair work was accomplished on a time-and-material basis, as a more equitable arrangement.

If a time-material basis is not possible, then an alternative is to have fixed unit prices for square footage or linear footage of work.

The Approach Roadway spans were inspected during the Second Inspection Visit of July 1980 and again reinspected during this visit. In particular, the topside portions were examined and on two separate days, the underside was reexamined, to clarify the conditions.

Since the inspection visit of July 1980, it was noted that a number of new transverse cracks have developed in the topside decking of the Approach Roadway spans. It is believed that this is not caused by the Contractor overloading the spans, as there is no evidence or report that such overloading was done. Instead, the cracks are probably due to repetition and vibration loading of increased construction traffic on the Approach Roadway spans. In this connection, when the initial inspection was made in January 1979, there was only one transverse crack at the extreme north end of Span No. 3, as shown on Contract Drawing NAVFAC 3017691 (Sheet 12). In comparison, there are now 22 transverse cracks. Accordingly,

since these cracks are of "hairline" width, it is not reasonable to grout the single crack at the north end of Span No. 3. It is recommended that this work be deleted, a credit to the Contract given and that none of the transverse hairline cracks be pressure grouted, as will be discussed later in this report.

The subsequent sections of this report will describe individually the additional new cracks and spalls to be repaired, both topside and underside for each individual span. The descriptions of work required, given below, supersede all previous reports, memos, etc., concerning the Approach Roadway repairs. All additional work is "extra work", for which the Contractor should receive extra payment.

The spans are numbered from No. 1 to No. 7 starting at the shore abutment and going out to the Loading Platform. The general numbering of these spans, at least to Span No. 5, is shown on NAVFAC Drawing 3017691 (Sheet 12). The additional work the Contractor is to perform, outside the scope of the original Contract, is now recorded below.

Span No. 1 - Topside: On the east side, in the fascia beam, above the steel girder, towards the extreme north end of the span, near the shore abutment, there is a 10 foot long horizontal hairline crack, running about 4 inches above the steel girder. This crack is insignificant. Repairs are not required.

However, there is a new horizontal crack at the south end

of the span, on the east fascia beam, having a length of about 15 feet, located about 5 inches above the steel girder. This crack is excessive. The concrete should be chipped out, sandblasted, cleaned and epoxy patched. This is extra work.

The top deck surface of the Approach Roadway has developed 8 hairline cracks, more or less uniformly spaced over the span, running transverse to the roadway. These are hairline cracks, probably caused by the increase in traffic repetition, loading and vibration. They are self-sealed hairline cracks and it is recommended that they be left alone. No repair work is necessary.

Span No. 1 - Underside: The Contractor had already repaired the north end of this span, near the abutment, per the Contract drawings. However, the south 1/3 area of the span on both the east and the west sides, for an area 12 ft. wide by 22 ft. long shows signs of incipient scaling. It is recommended that the Contractor "probe" this area with a light, small jackhammer to determine if the concrete is loose and will spall off. It is not possible by visual means to determine the extent of potential scaling. Accordingly, if the probings loosen off the underside of the decking, then the standard repairs would be sandblasting, cleaning and troweling on an epoxy concrete coating, the same as was done at the north end of this span. This particular area is probably the second worse area of additional repair work required. This is extra work.

Pump House: The pump house slab, both topside and underside, is in satisfactory condition. Only one transverse hairline crack was noted topside, across the roadway, but it is self-sealed and repairs are not required.

Span No. 2 - Topside: The Original Contract Drawing NAVFAC 3017691 (Sheet 12) showed a short length crack in the top west facia beam, to be pressure grouted. This has not yet been done by the Contractor, as this short crack has now extended for practically the full length of the span, from the north end to perhaps about 5 feet from Dolphin No. 1, at the south end. The 60 ft. long crack has opened up to such an extent that some of the reinforcing steel is exposed. This is no longer a crack to be repaired by pressure grouting. Instead, since this crack extends about 4 inches above the steel girder and is continuous horizontally, it should be chipped out for its full length. The reinforcement and concrete should be sandblasted and cleaned, and then the full length, epoxy patched, similar to the details for such work shown on the drawings. Some of this spalling extends underneath and should be repaired in its entirety, around the west steel girder. This is extra work.

Also at Span No. 2 there are, topside, 8 hairline cracks, transverse across the roadway, more or less equally spaced along the length of the span. Some of these cracks do not run across the full width of the roadway. Here again,

since the cracks are hairline and self-sealed, it is best at this stage to leave them alone. No corrective repair is required.

Span No. 2 - Underside: For a distance of about 10 feet at the north end, on the west side, immediately adjacent to the west girder, is some rather bad spalling which is a part of the full length horizontal fascia crack, described above. This length of 10 feet should be chipped out, the reinforcement exposed, sandblasted, cleaned and epoxy patched as a part of the work being accomplished for the topside west fascia beam described above. This is extra work.

In addition, for a length of about 15 feet at the south end of Span No. 2, on both the east and west sides, an area 12 ft. by 15 ft. shows evidence of incipient scaling. Here again, the Contractor should "probe" with a small jack-hammer to determine if the underside concrete will spall off. If there is spalling, and loose concrete, the area should be sandblasted, cleaned and epoxy-mortar troweled underneath, similar to normal, specified underside repair work. This is extra work.

Dolphin No. 1 - Topside: The concrete cap is octagon in shape, constructed over a circular sheet pile cell. On the southwest side of the octagon, between the two mooring bitts, about 8 feet of the concrete curb is shattered. The reinforcing steel is exposed and the metal nosing is bent in.

It appears as if a ship or barge had struck the curb, from the outside. Consequently, this cannot be considered normal deterioration. Possibly, it may be the Contractor's responsibility to repair as a result of his operations at the Pier. In any event, this curb length should be completely chipped out, the reinforcing steel exposed, the concrete and steel sandblasted and cleaned, and a new curb section cast, bonded by epoxy, shaped to the proper dimensions, as a continuation of the existing curb. The metal curb nosing should be straightened out before the new concrete is placed. This is extra work, if not damaged by the Contractor.

Dolphin No. 1 - Underside: The conditions underside at Dolphin No. 1 are the same as described during the Second Inspection Visit of July 1980. It appears that since the very first inspection of January 1979, the painting at the top of the steel sheeting has failed. Considerable corrosion is occurring where the sheeting penetrates into the concrete cap above. The corrosion has caused expansion and the concrete is spalling, falling out, and there is evidence of other incipient spalling. Repairs are needed at intermittent lengths around the perimeter of this sheet pile cell. About 100 ft.² of concrete area is involved. The work should consist of chipping out the loose, spalling concrete, sandblasting and cleaning the corroded reinforcement and top of steel sheet piling. Then, repair

the concrete with epoxy patches and repaint the top of the steel sheet pile cell. This is extra work, outside the original Contract.

Span No. 3 - Topside: The single hairline crack across the roadway, at the north end of the span still exists and surprisingly, this is the only crack across the roadway in the entire length of Span No. 3. No new hairline cracks have developed. As discussed previously, since it is now one of numerous hairline cracks and since it is self-sealed, it is recommended that the pressure grouting work, shown on the original Contract drawing, be deleted and the Contract given credit for this work deletion.

However, topside on Span No. 3 along about one half the span length, on the south half, on the west facia beam, there is a horizontal crack about 4 inches above the steel girder. This 35 ft. long crack should be opened up, chipped out to the top of the steel beam, sandblasted, cleaned and epoxy patched. This is extra work.

Span No. 3 - Underside: The original Contract Drawings showed underside repairs to be made at the north end of Span No. 3, and this was accomplished by the Contractor.

However, very severe scaling and even spalling have occurred along the full width of Span No. 3 for its southerly half. The area is about 12 ft. wide by 35 ft. long. The

reinforcing steel is exposed. This entire area and for some distance north towards the previous repair, should be "probed" with a small jackhammer and then after the scaled concrete is hammered off, the entire area should be sandblasted, cleaned and epoxy repaired with a troweled mortar. This is extra work.

Span No. 4 - Topside: The pipe railing on the west side is bent, probably struck by some construction equipment. This will have to be repaired by the Contractor.

Toward the north end there are four transverse, hairline cracks across the roadway. Again, they are of no consequence, self-sealed. No work is necessary.

Span No. 4 - Underside: The east half of the roadway, for a distance of about 8 feet, on the north side, shows signs of incipient scaling. The Contractor must "probe" this 6 ft. by 8 ft. area with a small jackhammer and determine if scaling will occur, exposing the reinforcement beneath. If this does happen, then the area will have to be sandblasted, cleaned and an epoxy mortar surface troweled on in accordance with typical details on the Contract Drawings. This is extra work.

In addition, at the south end of Span No. 4, on the west side, for a distance of about 5 feet, there is a 6 ft. by 5 ft. area, where again there is evidence of incipient scaling. The same procedure should be employed here with

"probing" and then repairing with a trowel epoxy mortar coating, as described above, for the north end of Span No. 4.

Support- No. 4 and No. 5: The concrete support between Span No. 4 and Span No. 5 and most particularly on the Span No. 4 side of the expansion joint, shows considerable spalling of concrete with reinforcing steel exposed. This occurs over the full width of the roadway expansion joint, at its underside. The 12 ft. long area should be chipped, sandblasted, clean and epoxy patched. This is all extra work.

Span No. 5 - Topside: For the record, the topside is satisfactory and shows no cracking either at the fascia beams or the roadway itself. There are no transverse hairline cracks in this span.

Span No. 5 - Underside: The Contract Drawing, NAVFAC 3017691 (Sheet 12), shows some repair to be accomplished at the southeast corner of Span No. 5 and the Contractor has accomplished this work.

However, in addition, at four or five different locations, about equally spaced, at the underside of the Span, there is evidence of light scaling. Altogether, the area presently appears to cover a total of about, say 35 sq. ft. However, the underside of this entire span requires inves-

tigation with the Contractor "probing" with a small jackhammer, to determine exactly how much of this concrete is subject to potential scaling. Once the extent of "loose" concrete is determined and chipped out by the jackhammer, then the area should be sandblasted, cleaned, and a mortar trowel coat applied, in accordance with the standard Contract Drawings. This is all extra work.

Dolphin No. 2: This is an octagon shaped concrete cap. On the west side, between the two mooring bitts, along the curb, the steel nosing, for a length of about 15 feet, has been ripped off. Possibly this was done during a ship berthing or by the Contractor's operations. In any event, the metal curved nosing should be replaced to prevent wire rope lines from rutting out the concrete. The cost for this work is dependent on whether or not the Contractor ripped out the nosing, or it was done by a ship.

The underside of Dolphin No. 2 is in satisfactory condition.

Span No. 6 - Topside: On the west fascia beam, at the north end, there is a 6 ft. long horizontal crack, about 4 inches above the steel girder. Based on experience with previous, similar cracks, it is apparent that it will open up and deteriorate with time. It is therefore recommended that the concrete be chipped out, sandblasted clean and epoxy patched. This is extra work.

The roadway of Span No. 6 is free of any transverse, hairline cracks.

Span No. 6 - Underside: The underside of the roadway at Span No. 6 is in satisfactory condition.

Span No. 7 - Topside: There are some spalls, for about 5 feet, in the center of the span, along the west curb. This was probably done by construction equipment, as it does not appear to be natural spalling of the concrete. This should be repaired by the Contractor, as a part of his operations, at no cost to the Government.

There are no transverse, topside hairline cracks in the roadway of Span No. 7.

Span No. 7 - Underside: The underside of Span No. 7 is in satisfactory condition.

Loading Platform: Span No. 7, described above, frames into the Loading Platform. The repairs to the Loading Platform are already a part of the Contract.

The additional work required under the Contract, due to deterioration of the Approach Roadway Spans, since the time when the Contract Plans were first prepared, is quite varied. Specific quantities or the total amount of repairs needed is not determinable in advance, without exploratory "probing" by the Contractor, using a small jackhammer and equipment.

Accordingly, should this extra work be negotiated on a quantity basis, it is recommended that the Contractor give separate unit prices for the following items of work:

1. Exploratory jackhammering and "probing" of undersides of slabs, on a unit price basis, per square foot.
2. Chipping out, sandblasting, cleaning and applying troweled mortar surfacing to spalled underside concrete surfaces, on a unit price basis, per square foot.
3. Chipping out, sandblasting, cleaning and epoxy patching of fascia beams and expansion joint cracks on a unit price basis, per linear foot.
4. Repair of shattered curb at Dolphin No. 1, on a lump sum basis.
5. Repair and replacement of ripped off metal nosing at Dolphin No. 2, on a lump sum basis.
6. Additional overhead and profit charges for the above work, based on a percentage of the value of the above work accomplished.

All of the repair work outlined above can be accomplished by the Contractor on a "part time" basis when other operations are not possible, for reasons of equipment breakdown, etc. The problem, however, will be that when epoxy patches or mortared surfacing are first applied, the decking should not be loaded and the steel beams deflected, until the repair work has gained sufficient strength to resist stresses. Otherwise, with equipment rolling over the Approach Roadway, the vibration and deflection will damage freshly applied epoxy repairs.

UNDERWATER CONDITIONS OF NEW CONSTRUCTION

Based on reports from various personnel, diving in the vicinity of the POL Pier, underwater examination of the steel sheet piling, installed at the North Dolphin and as fendering for the Loading Platform, disclose that the sheeting is in good condition.

It was also reported that the 10-inch casings for the rock anchorages, extending down into the water, have already developed considerable barnacle growth. This is of no particular significance. The 10-inch exterior casing pipe is sacrificial to the reinforcing cage, which is inside the inner 8 inch diameter pipe.

CONCRETE SAND

The Contractor has not yet started any concrete work, particularly as required for the concrete caps at the new North and South Dolphins. It is understood that the Contractor has been contemplating the use of beach sand for the concrete and attention is called to the fact that for these large pours, beach sand may be used, provided it is thoroughly flushed and washed with fresh water, prior to mixing, and it conforms to ASTM C-33, ASTM C-125 and the gradation as specified under Sections 5.3.1 of the Concrete Specifications. The Specification allows use of such beach sands.

GENERAL FACIA SPALL REPAIRS

It is stated for the record that the Contractor has to date accomplished none of the general facia spall repairs shown on the Contract Drawings, other than the work on the Approach Roadway Spans, as previously described.

FENDERS AT DOLPHIN NO. 4

It is stated for the record that no work has been accomplished at Dolphin No. 4, in preparation for installation of the Delta rubber fenders. The units are presently stockpiled on shore. The Contractor will have to remove portions of the old timber pile fendering, repair the concrete facias with epoxy concrete patches and then install the Delta rubber fenders.

ELECTRICAL WORK

It is stated for the record that none of the electrical work has been installed.

The Contractor has ordered the insulating cells that have been approved, as a substitute for the mica gap.

CATHODIC PROTECTION

The present POL Pier is cathodically protected and connected to the pipelines, going out to the tank farm.

In examining the underside of the Pier, it was

noted that some of the existing cathodic wires are hanging loose, ripped off either by storms or possibly by the Contractor's operations. This matter will have to be checked by the Base Cathodic Engineer.

Also, the new construction must soon be cathodically connected to make certain that the new installed sheeting does not become an anode to the existing cathodic system on the Pier. However, this cannot be done until the work progresses further, as for example, the steel cap channel, on top of the steel sheet piling, is a part of the "electrical connections" for the cathodic protection system.

Once the project moves ahead to completion, this entire matter of cathodic protection and interconnection will have to be examined by the Base Cathodic Engineer, in conjunction with the existing system on the old Pier.

CLEANUP

When the job is completed, the Contractor will have to repair some of the items that have been damaged by his operations, such as curbs, fencing, etc.

In addition, considerable touchup painting will be required. Also, the area must be swept clean, as for example, it was noted that some expansion joints and drain scuppers are clogged with crushed stone, dropped on the roadway.

DANAC STORAGE SHED

The DANAC work shed on the job site is a red metal frame building with concrete floor and toilet facilities. It is understood that, according to the Contract, DANAC is supposed to demolish or remove everything they build at the job site.

This matter of demolishing and removing this shed should be reviewed by the Base, particularly to determine if the building can be of use to the Government.

DANAC would probably dismantle the shed for use elsewhere. However, it seems that a tradeoff is possible here, in which both parties would profit.

CONTRACTOR'S CLAIMS

It is understood that the Contractor has so far placed or intends to make three claims.

The first claim was with respect to the boulder obstructions anticipated during driving of the casings for the rock anchorages at Dolphins No. 2 and No. 3. This matter has been resolved to the extent that the claim has been analyzed.

The second claim will apparently be related to delays caused by not being able to unload the 60 ton DANAC crane, when it arrived in the harbor. It is understood that

this claim will be for extra completion time of about 30 days, plus money. This claim has not yet been submitted by the Contractor.

The third claim will supposedly be related to the limitation of 7,500 lb. lift on the TTU crane, mounted on the LCM. The Contractor indicated that there would be a claim for nine days of extra time, plus money. Again, the amount is not known.

CONCRETE BLOCK WHARF CORNER

At the southwest corner of the "shore hardstand", a concrete block has fallen out and requires replacement. A portion of this corner now cantilevers out over the open void. There is concern that if heavy equipment is placed at the corner, there could be a collapse.

The void is about 8 ft. long in an east-west direction, about 3 ft. wide in a north-south direction and about 4.5 ft. high. The top of the void is about 5 ft. below the wharf surface and at low tide, water is at the bottom of the void.

The Contractor reported that the block that had been "plucked out" by wave action, had washed out on the beach some distance away. However, this block was not seen. Apparently, it has been buried in the sand.

Repairs to this void should be a part of the pres-

ent DANAC contract, accomplished with the concrete work for the concrete caps at the new North and South Dolphins. The same concrete specification can be used.

One method of repair is to simply precast a concrete block of smaller dimensions than the void, clean the surface of the voids, place a mortar bed, insert the block and then mortar around it.

It would also be a satisfactory alternative to fill the space, placing small concrete blocks by hand, mortaring them into position, during low tide.

It is not a large job and can easily be accomplished by the Contractor as "spare time" work, as an extra to the present Contract. It should be done as a lump sum.

NAVY RESIDENT OFFICER

Mr. Raymond Armbrust officially commenced work on behalf of the U. S. Navy, inspecting the project, on October 1, 1980, replacing Capt. Richard Weeks of the U. S. Army Corps of Engineers.

Discussions were held with Mr. Armbrust and Capt. Weeks. Visits were made to the POL Pier. The Contract Drawings and Specifications were briefly reviewed. In effect, Mr. Armbrust has an overall concept of the project and the general intent of the designs.

SUMMARY MEETING

A summary meeting was held on Thursday, October 2, 1980. Present were Col. Brooks, Mr. Hatfield, Mr Hayes, Capt. Domigue, Mr. Armbrust and S. M. Olko.

General items were discussed, which are of overall interest, in terms of the progress of the job.

It was agreed that a summary of the construction work accomplished, as of October 1, 1980 and October 7, 1980, the official termination date of the Contract, should be recorded.

A detailed Time Schedule will be obtained from the Contractor, taking into account future ship berthings, so as to plan coordination between the Government and the Contractor, in the coming weeks.

The matter of cathodic protection was discussed, along with the need for additional concrete repairs beneath the Approach Roadway spans.

The progress on the South Dolphin and the driving method employed by the Contractor was discussed.

The construction completion date estimated by Olko is mid January 1981.

FUTURE INSPECTION VISITS

This Third Inspection Visit completes the visits scheduled in the Basic Contract, between Olko Engineering and NAVFAC.

Originally, it was determined that the First Inspection Visit would be to observe installation of rock anchorages. The Second Inspection Visit was scheduled to observe the driving of sheet piling. The Third Inspection Visit was to have observed the epoxy pressure grouting of the Loading Platform.

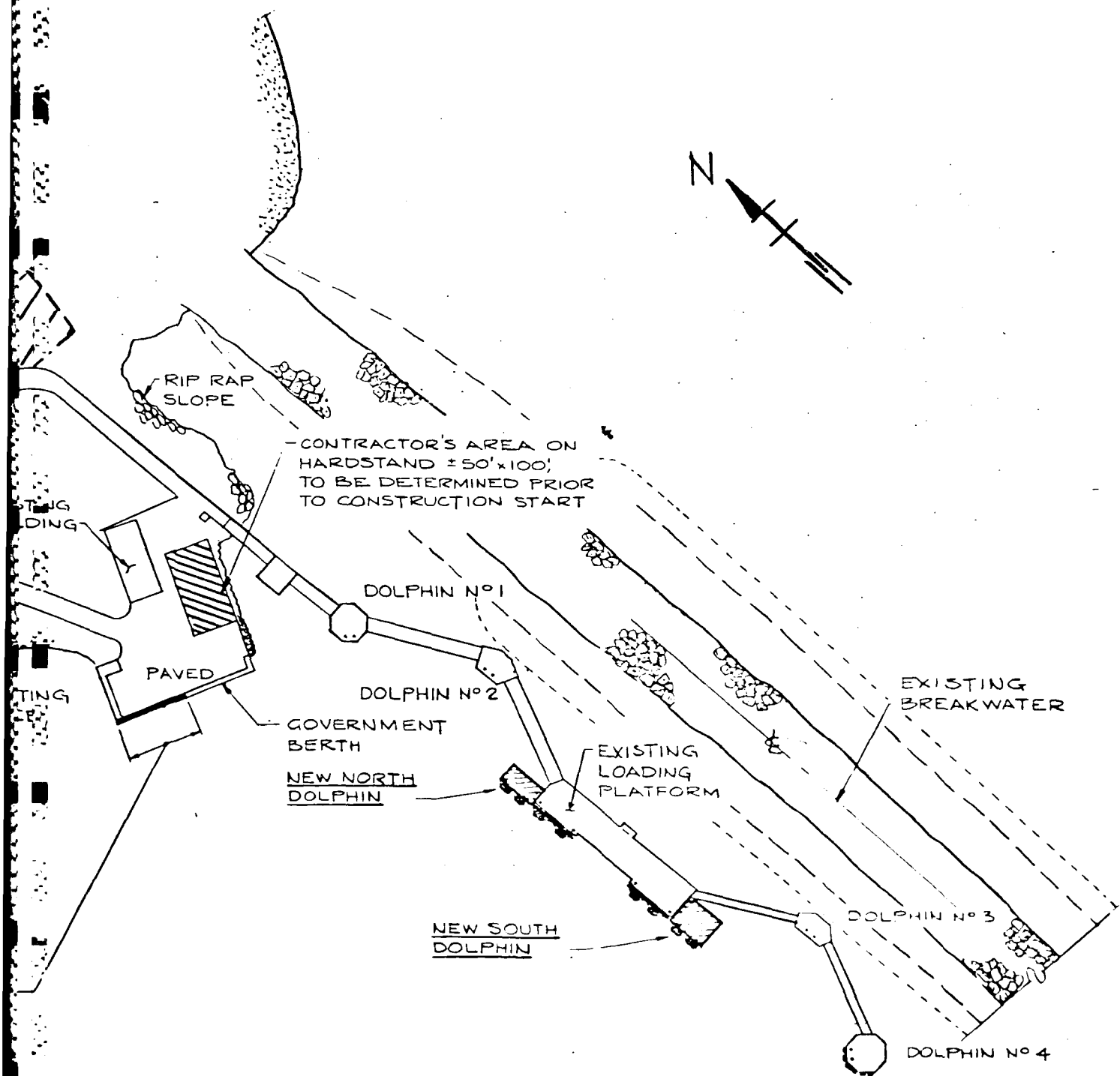
The epoxy pressure grouting of the Loading Platform has not taken place and the work has fallen behind schedule on various aspects, with the original work sequence changed, as the job progressed.

Accordingly, considering the work done to date and the work that remains, it is recommended that a Fourth Inspection Visit be scheduled. The specific date can be determined by NAVFAC, in conference with Mr. Armbrust. It would appear, however, that logically the inspection should be made either in early December, to observe pressure grouting of crack repairs, or in early January 1981, to prepare a "punch list", before the Contractor is finished.

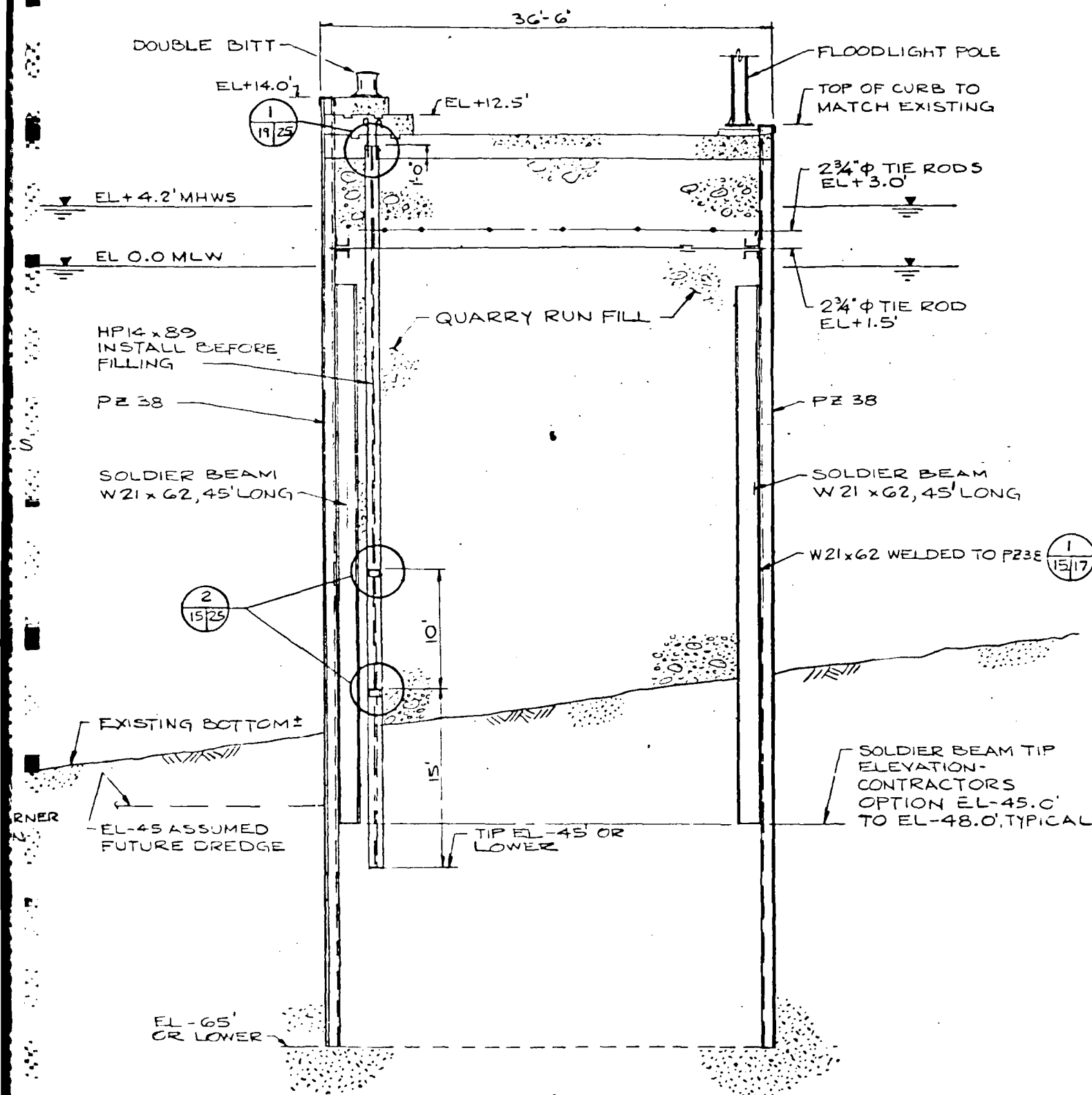
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S. M. Olko



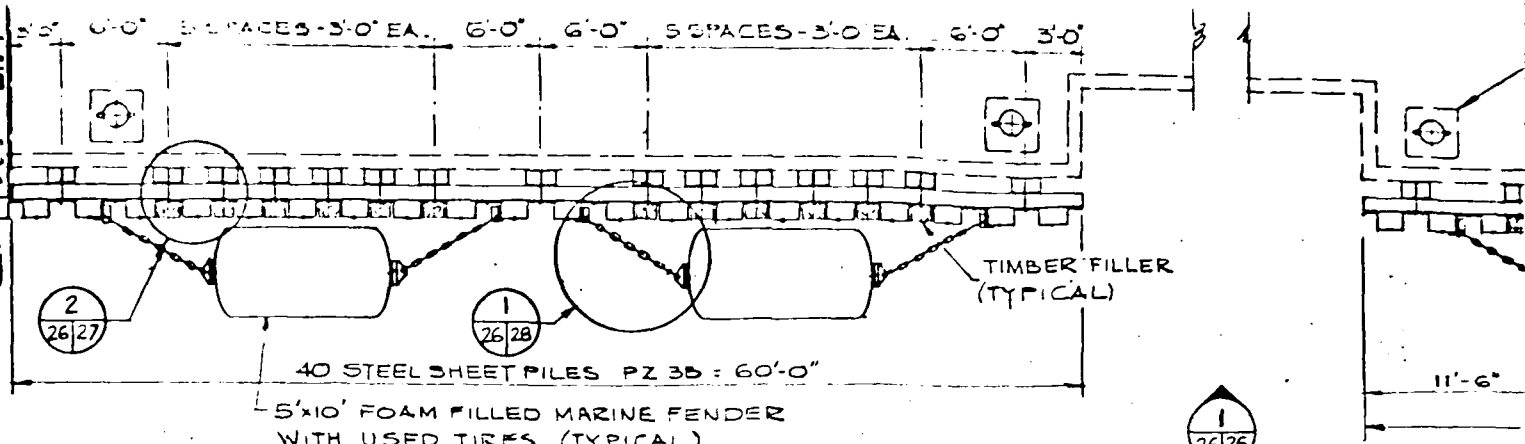
- PRAIA BAY -



SECTION

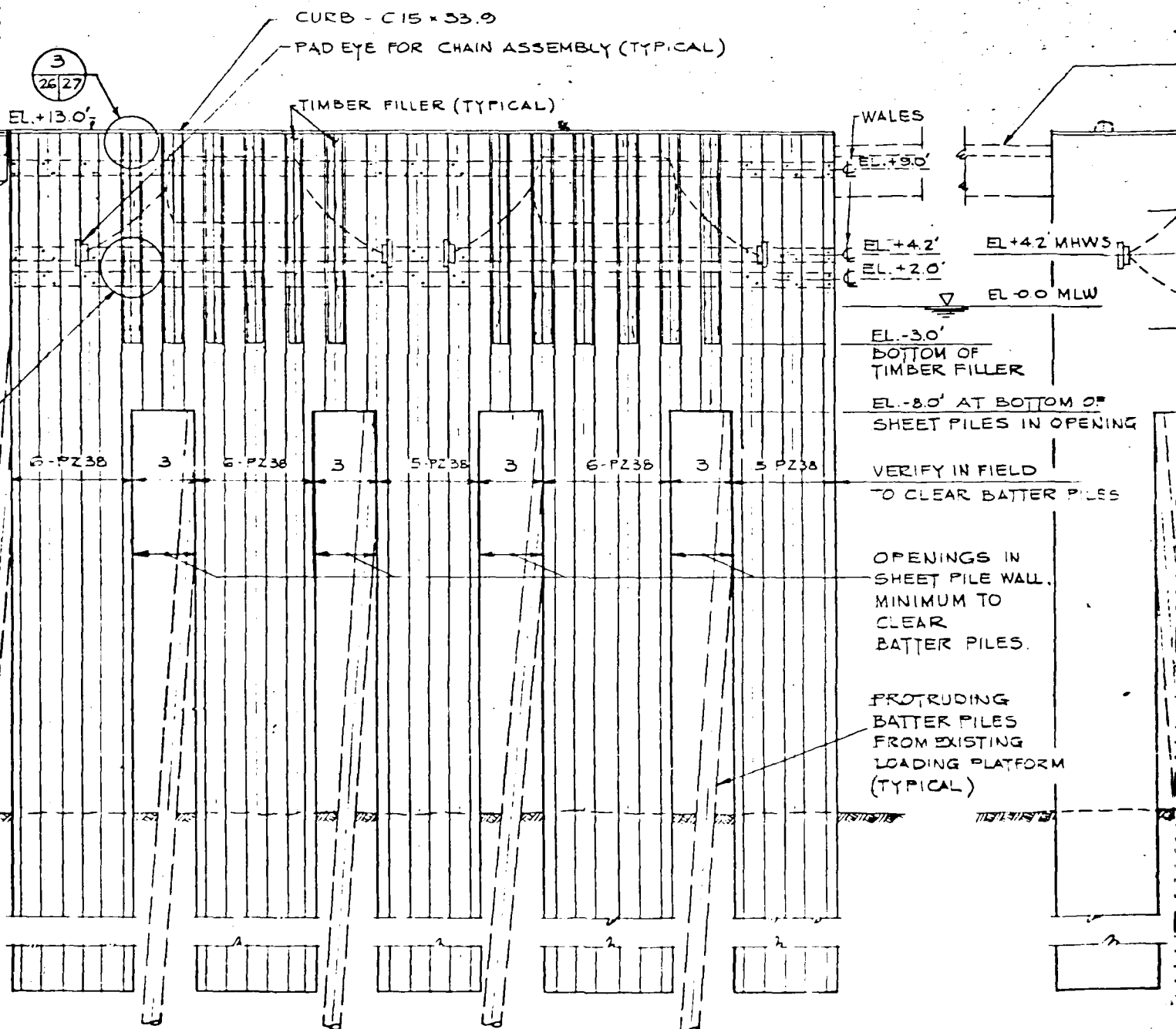
3/16" = 1'-0"

1
15/15



NORTH END-LOADING PLATFORM

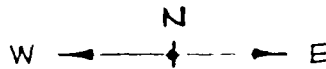
PLAN



NORTH END

ELEVATION

1 (26/26)



BENTS 1 TO 5 AND 12 TO 16
POCKET IN CONCRETE DECK
FOR ANCHORAGE TIE DOWN,
GROUT AND PATCH AFTER TENSIONING PILE.

EXISTING REINFORCING STEEL
TO REMAIN INTACT

BENTS 12 TO 16
EXISTING VOID
OVER PILE

EXISTING
REINFORCING

1/4" ϕ THREADED
ANCHOR ROD
(TYPICAL)
(2 PER PILE)

FABRICATED ANGLE PLATE
FOR ANCHORAGE TIE DOWN

LEVEL SURFACE
1" GROUT (TYPICAL)

BENTS 12 TO 16
CHIP OUT POCKET FOR
ACCESS TO VOID ABOVE PILE
FILL VOID AND POCKET AFTER
PILE TIE DOWN IS COMPLETED

3/4" THICK STEEL PLATE -
BRACKET WELDED TO STEEL
BATTER PILE (TYPICAL)

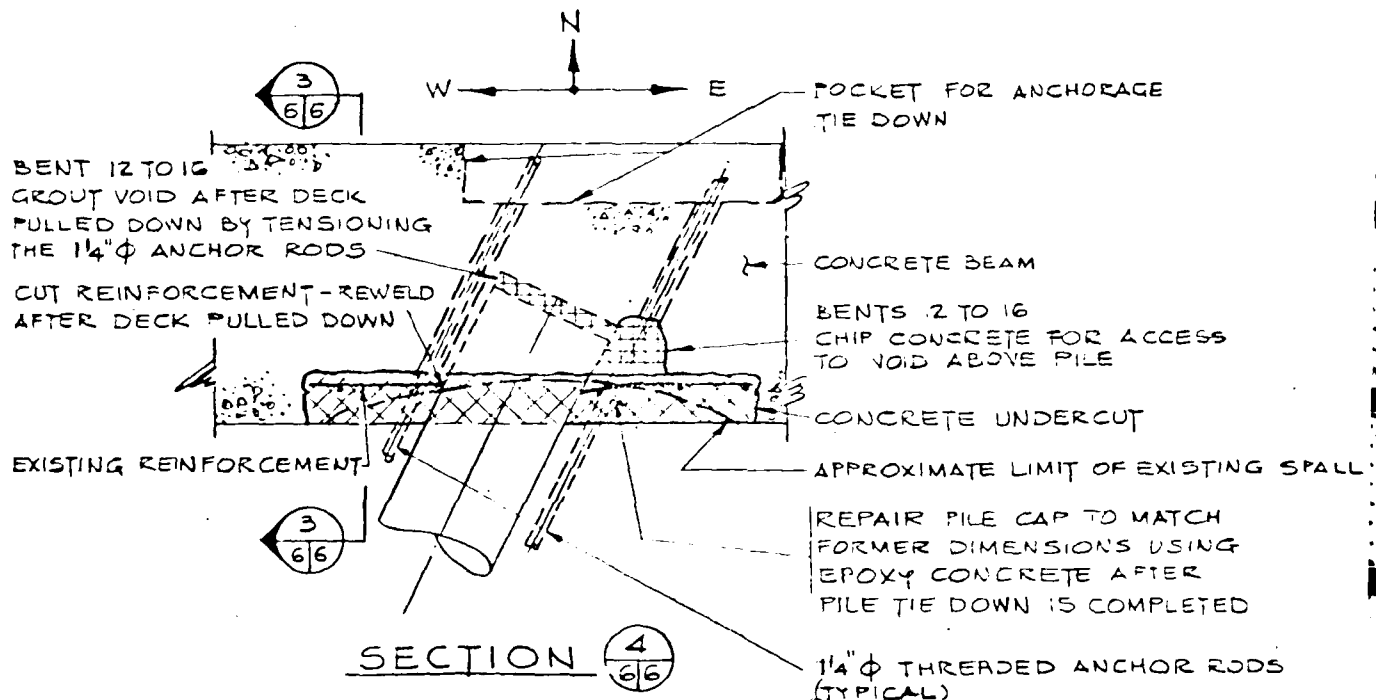
3" ϕ DRILLED HOLE, GROUT
AFTER TENSIONING PILE

SECTION 2

ER FILE TIE - DOWN

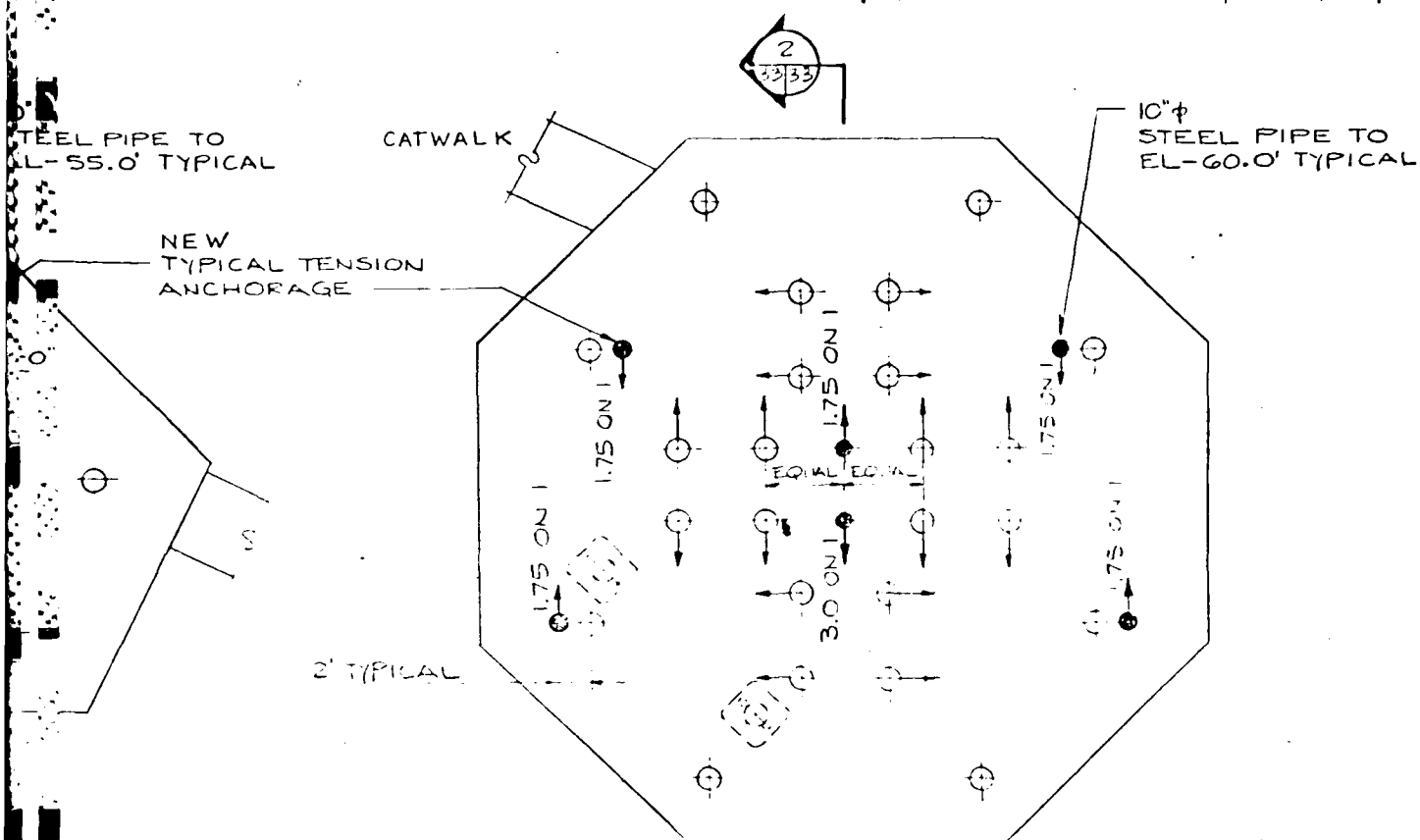
1 TO 5 AND 12 TO 16 INCLUSIVE

1" - 1'-0"



PAIRS AT WEST BATTER PILES

REVISIONS				
SET	DESCRIPTION	PREPARED BY	DATE	APPROVED



PLAN - DOLPHIN N° 4

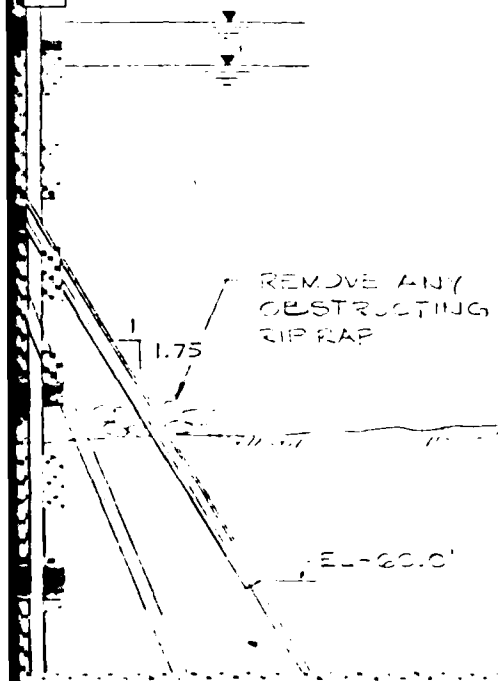
NOTES: 1- FOR CATHODIC PROTECTION SEE NAVFAC DRAWING N° 3017719, SHEET 40 OF 40.

2- ALL 8" ϕ STEEL PIPE SHALL HAVE A MINIMUM WALL THICKNESS OF 0.322".

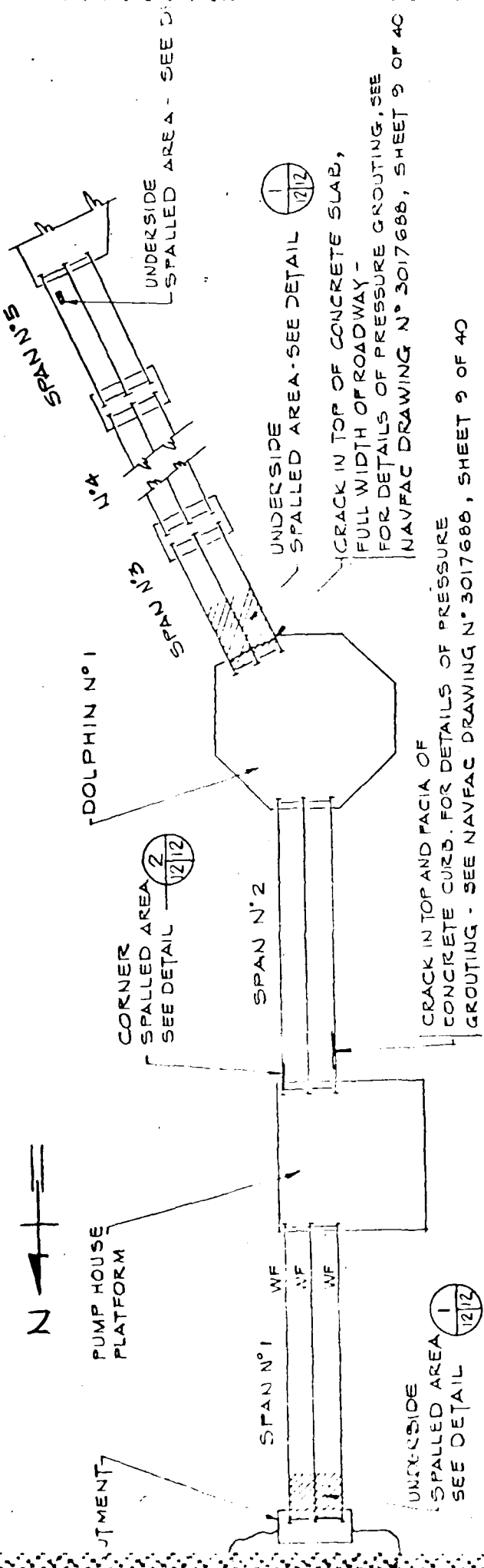
3- ALL 10" ϕ STEEL PIPE SHALL HAVE A MINIMUM WALL THICKNESS OF 0.365".

4- ALL 8" ϕ AND 10" ϕ STEEL PIPE SHALL BE BUTT WELDED.

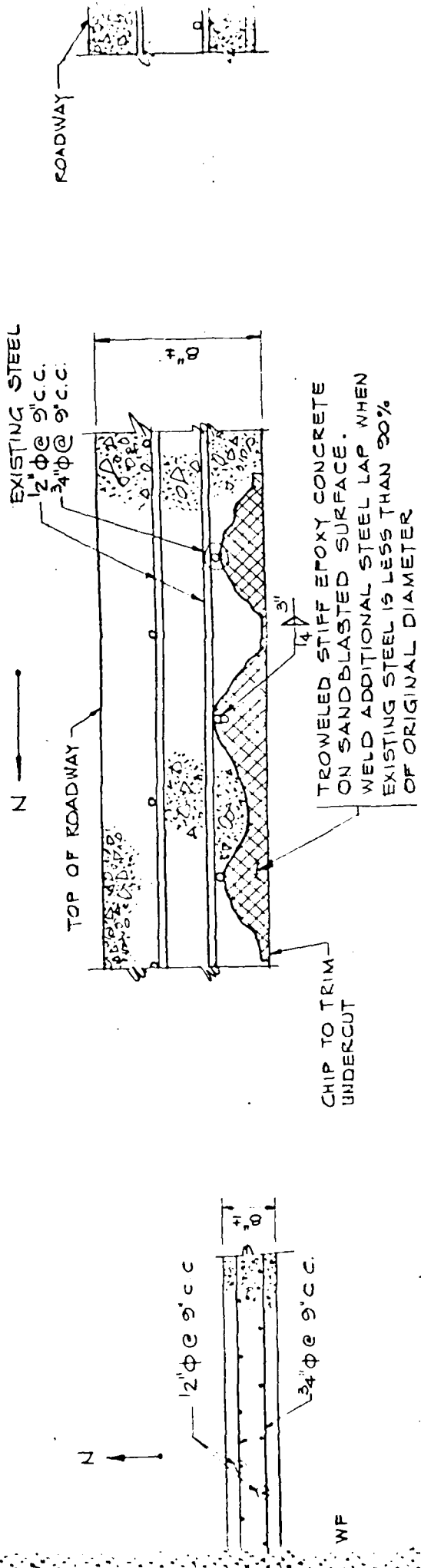
5- FOR BED ROCK ELEVATIONS SEE C OF E. DRAWING N° AW 88-01-03



100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900 10000



PLAN
1/16" = 1'-0"



REFERENCE SECTION

END

DTIC

8-86

END

DTIC

8-86